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U. S. DEPARTMENT OF AGRICULTURE.

U S WEATHER BUREAU.

Bulletin L.

CLIMATOLOGY OF CALIFORNIA.

123274

Prepared under the direction of WILLIS L. MOORE, Chief U. S. Weather Bureau,

BY

ALEXANDER G. McADIE, Professor of Meteorology.

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The Southern Pacific Company has for many years had its agents keep a daily record of rainfall and temperature, which records have been compiled by the Weather Bureau office at San Francisco. Data from 181 stations in California have been thus collected. Through the courtesy of the Santa Fe System reports from ten stations in the San Joaquin Valley are received.

Due credit must also be given to the voluntary observers of the State; and in particular to Mr. Samuel H. Gerrish, Sacramento; Mr. J. A. Edman, Edmanton; Mr. J. C. Stanton, Rio Vista; Mr. C. W. Hendel, La Porte; and Dr. C. Max Richter, of Santa Barbara. The records, journals, and diaries of Thomas Tennent, Dr. G. H. Gibbons, Dr. T. A. Logan, and Mr. John Pettee have been generously drawn upon for data. To these records we are indebted for all data preceding the period of regular Weather Bureau observations.

Mr. J. B. Lippincott, of Los Angeles, resident hydrographer of the United States Geological Survey, has kindly placed at our disposal the rainfall data at high altitudes used by him in his engineering practice. In California seasonal rainfalls and data showing probable water supply in various drainage basins are of the utmost importance to the engineering profession. In the present paper many fragmentary rainfall records had to be omitted in order to keep the volume within reasonable limits. Many of these can be found in "Irrigation and Water Storage" by Glassford.

The diagrams of rainfall in this memoir show the seasonal amounts, because for engineering and other purposes the seasonal rather than the calendar year totals are desired. In the various tables, however, it was thought best to continue the usual yearly amounts.

The table of elevations has been materially changed and many corrections made by Prof. George Davidson and Prof. Joseph N. Le Conte, both of the University of California.

CLIMATOLOGY OF CALIFORNIA.

CONTROLLING FACTORS.

The general climatic conditions of the Pacific coast, and particularly the climate of California, may be said to be controlled by four great factors. These are—

1. The movements of the great continental and oceanic pressure areas—the so-called permanent "highs" and "lows." Under this head we include also the most active factor in climatic development, namely, the movements of individual pressure areas, since there is now good ground for believing that the paths of these individual disturbances—large-sized whirls and counter whirls—are largely determined by the general relations of the permanent pressure areas;

2. The prevailing drift of the atmosphere in temperate latitudes from west to east;

3. The proximity of the Pacific Ocean with a mean annual temperature near the coast line of about 13° C. (55° F.), a great natural conservator of heat, and to which is chiefly due the moderate range of temperature along the coast from San Diego even to Tatoosh Island; and

4. The exceedingly diversified topography of the country for a distance of 200 miles from the coast inland.

PRESSURE DISTRIBUTION.

It was early shown by Hoffmeyer that the distribution of the great so-called permanent pressure areas over the North Atlantic Ocean determined largely the character of the seasons in northern Europe. Teisserenc de Bort, discussing the causes of an abnormal winter in central Europe, called attention to the fact that during this period the great high-pressure area ordinarily overlying the Atlantic Ocean between latitudes 20° and 40° north had moved somewhat from its normal position. Eliot, Blanford, and others have shown that the great atmospheric movements over India are more or less connected with the chief features of the weather there, particularly with respect to the monsoons and rainfalls. Fassig has recently shown that the weather conditions prevailing in the United States east of the Rocky Mountains during March may be connected with the movement of the large pressure areas; and, in brief, that the weather of the Middle Atlantic States[a] "is cold when the continental high controls, warm when the Atlantic high extends its influence westward beyond the coast, and normal when there is a fairly equal development in strength and extent of the two high areas, in which case now one, then the other, is in control of the wind direction, bringing alternately cold and warm air to the region. The paths of storms lie within the trough between the two high areas; when the trough is wide the storm paths are widely scattered; as the high areas approach one another the storm paths are contracted within narrower limits."

Over the North Pacific Ocean in winter there exists an area of low barometer covering the region between the latitudes of 40° and 60° north and 130° west to 140° east longitude. An area of high pressure overlies the greater part of North America with a southwest extension to the Tropics and west to the one hundred and sixtieth meridian. We shall find that typical wet winters on the California coast occur when this great North Pacific low extends well eastward overlying the continent west of a line drawn from San Francisco to Calgary. At the same time the great continental high area apparently recedes to the southeast. On the other hand, the

[a] Am. Jour. of Science, Vol. VII, Nov., 1899.

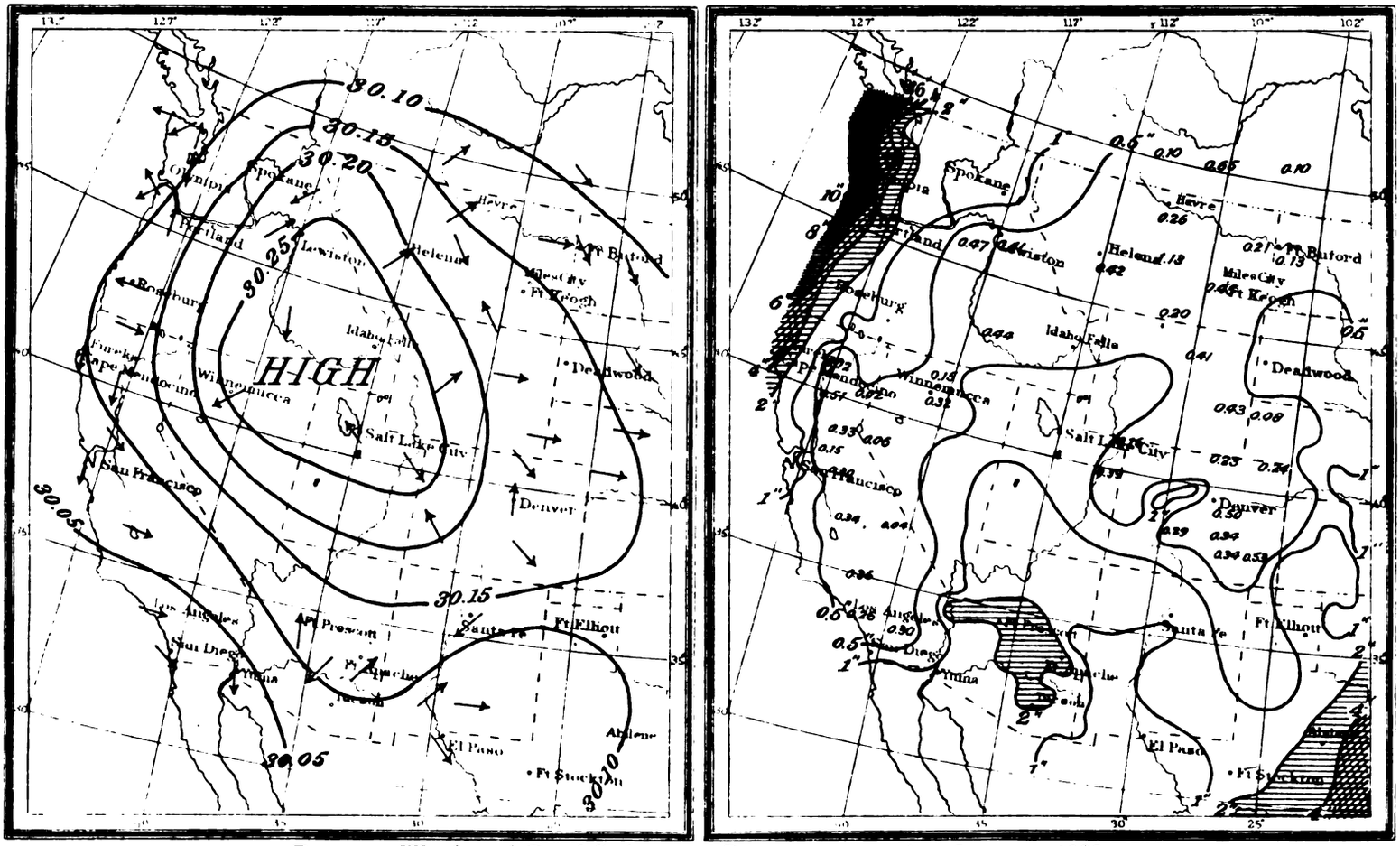
pressure distribution characteristic of a dry winter on the California coast is marked by the prevalence of the continental high over the entire country west of the Rocky Mountains. This relation is very clearly shown in the series of four charts following taken from Prof. A. J. Henry's "Rainfall of the United States." Professor Henry states "The prevailing winds and the pressure distribution shown on the chart for December, 1889, are favorable for heavy precipitation in California and the plateau region. The pressure distribution is abnormal, as is also the rainfall; * * * the chart represents an extreme condition, viz, a transfer of the usual track of low-pressure areas of the northern boundary southward to central California and the plateau region of Nevada and Arizona, * * * this region being ordinarily covered by an area of high pressure."

This relation of permanent pressure distribution and rainfall is more plainly shown on the series of charts for December, 1901, January and February, 1902. December and January were months of marked deficiency in rainfall, and it will be noted that during this period the continental "high" overspread nearly the entire country west of the Rocky Mountains. The prevailing air movement in California under such conditions is from the north or northeast and, as might naturally be inferred, such a circulation is accompanied by scanty precipitation. During February, however, there is a noticeable change in pressure distribution. The continental "high" is now well to the east of the Rocky Mountains, while the North Pacific "low" has apparently moved well in over Vancouver Island and Washington. The general air movement is now from the south and southwest and the rainfall very heavy, especially in the northern coast counties of California. At some places in the redwood section the rainfall amounted to as much as 40 inches during the month.

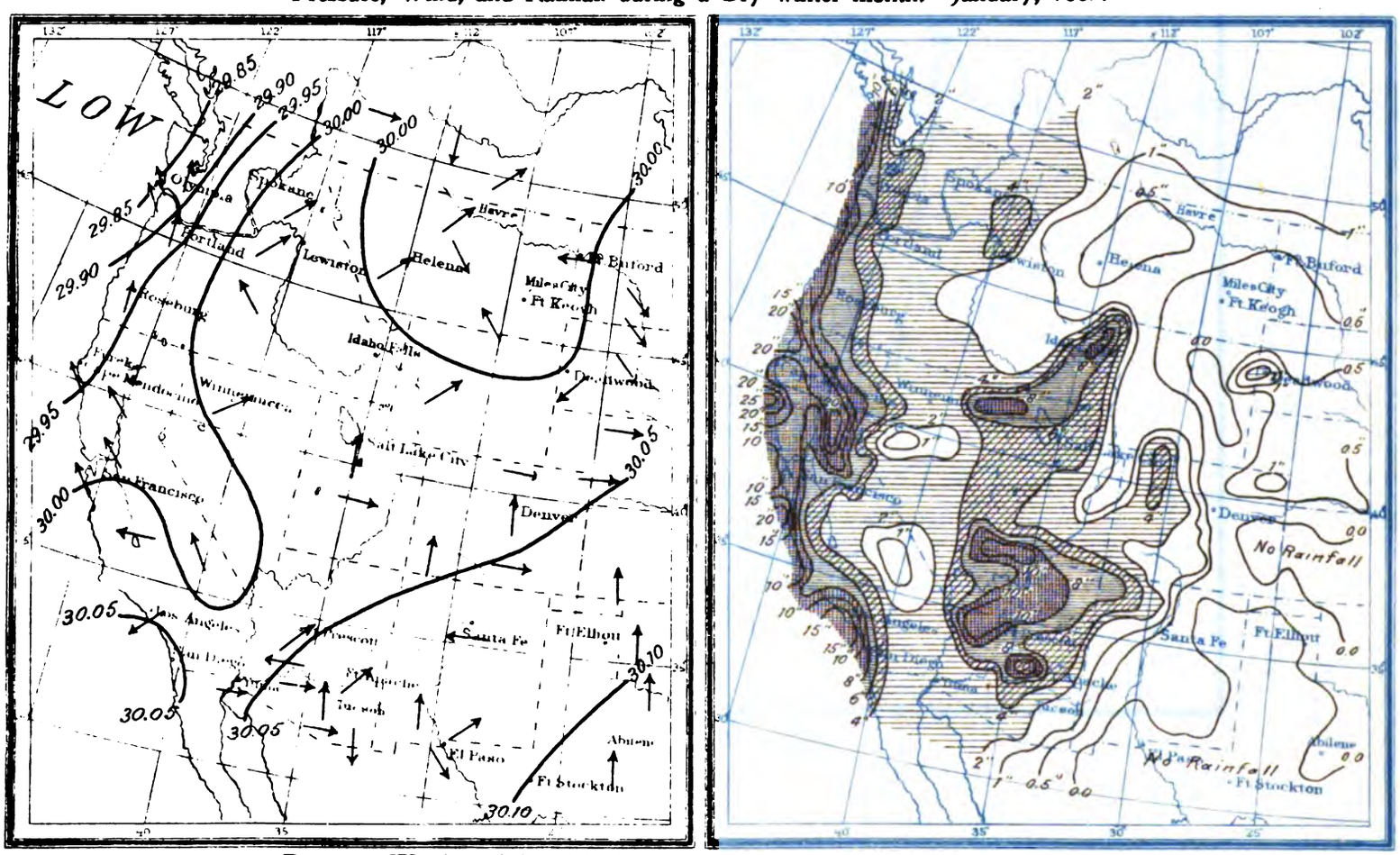
No one who has not lived in California can realize the relief which this generous rainfall of February brought to an anxious community.

The extensive record of rainfall at San Francisco, covering a period of fifty-three years, may be studied to advantage in connection with the pressure distribution. There were six Decembers during which the rainfall exceeded 10 inches, the normal December rainfall being 5 inches. These months were in 1852, 1866, 1867, 1871, 1880, and 1889. The pressure distributions for the earlier years are not available, but the conditions for the month of December, 1889, are characteristic and are shown in detail in the charts here given. The mean rainfall for December at this station is about 5 inches; the greatest rainfall was in 1866, when 15 inches fell. In 1871 14 inches fell. The driest December on record was that of 1876, when no rain fell during the entire month. Pressure charts are not available, but the probability is that the chart would greatly resemble that given for December, 1901. There were seven Decembers in this period in which the total monthly precipitation did not exceed 1 inch.

For January a similar relationship is found to exist. In 1862 the rainfall exceeded 24 inches, or nearly five times the normal amount. In 1866 over 10 inches fell; in 1878 nearly 12 inches, and in 1890 over 9 inches. The driest January of recent years was in 1891, when less than 1 inch fell. The pressure distribution is that of the type shown by 1892 and 1889. For February the mean rainfall is about 3½ inches. In 1878 over 12½ inches fell; in 1887 over 9 inches. In 1891 the February rainfall was 7.26 inches and in 1902, 7.27 inches. It is interesting to note that the pressure charts for these years closely resemble each other over the country west of the Rocky Mountains. On the Atlantic seaboard the pressure distributions are not alike.



Pressure, Wind, and Rainfall during a Dry winter month.—January, 1889.



Pressure, Wind, and Rainfall during a Wet winter month.—December, 1889.

Sea-Level Pressure; Resultant Surface Winds. December, 1901.

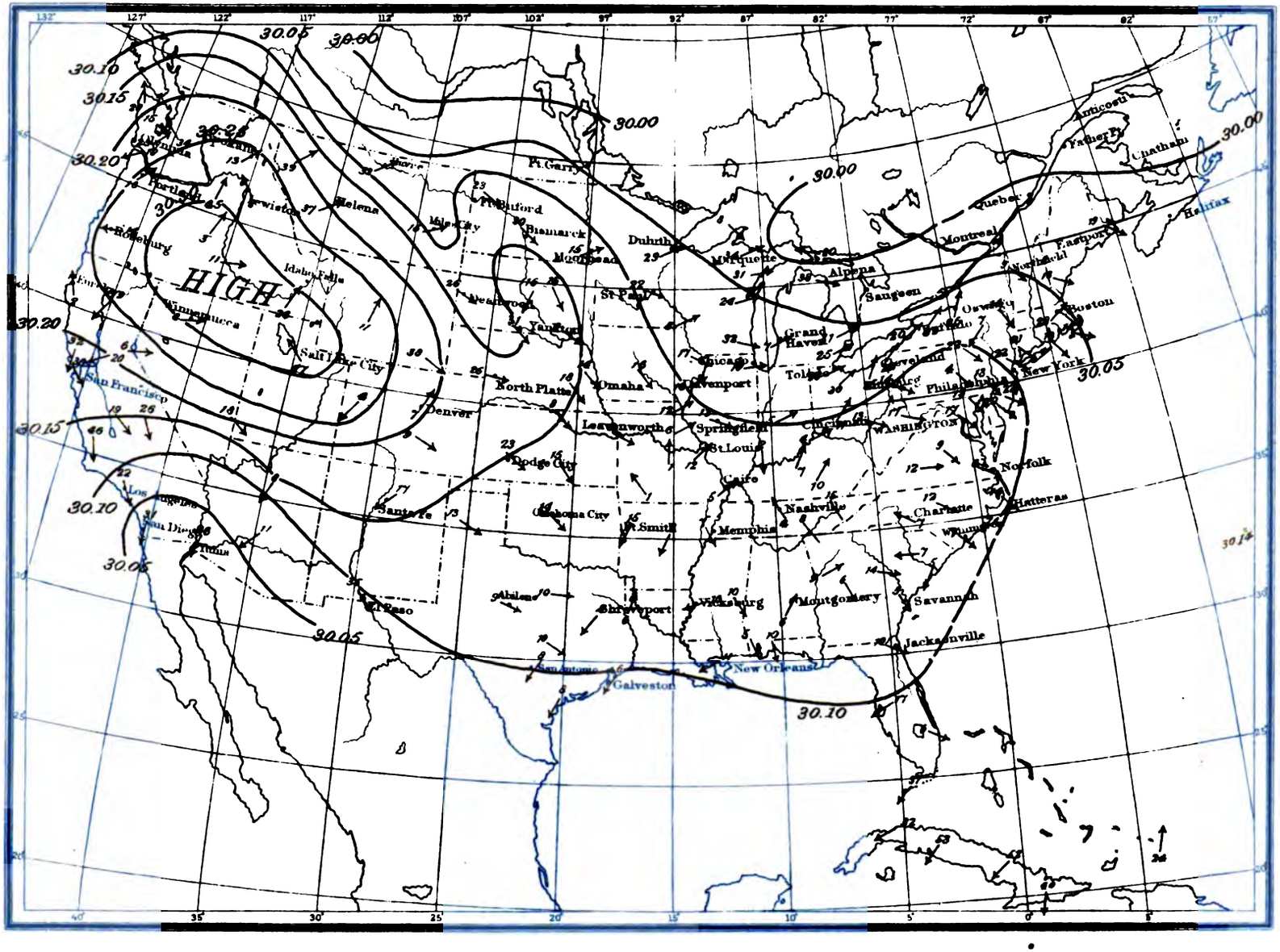
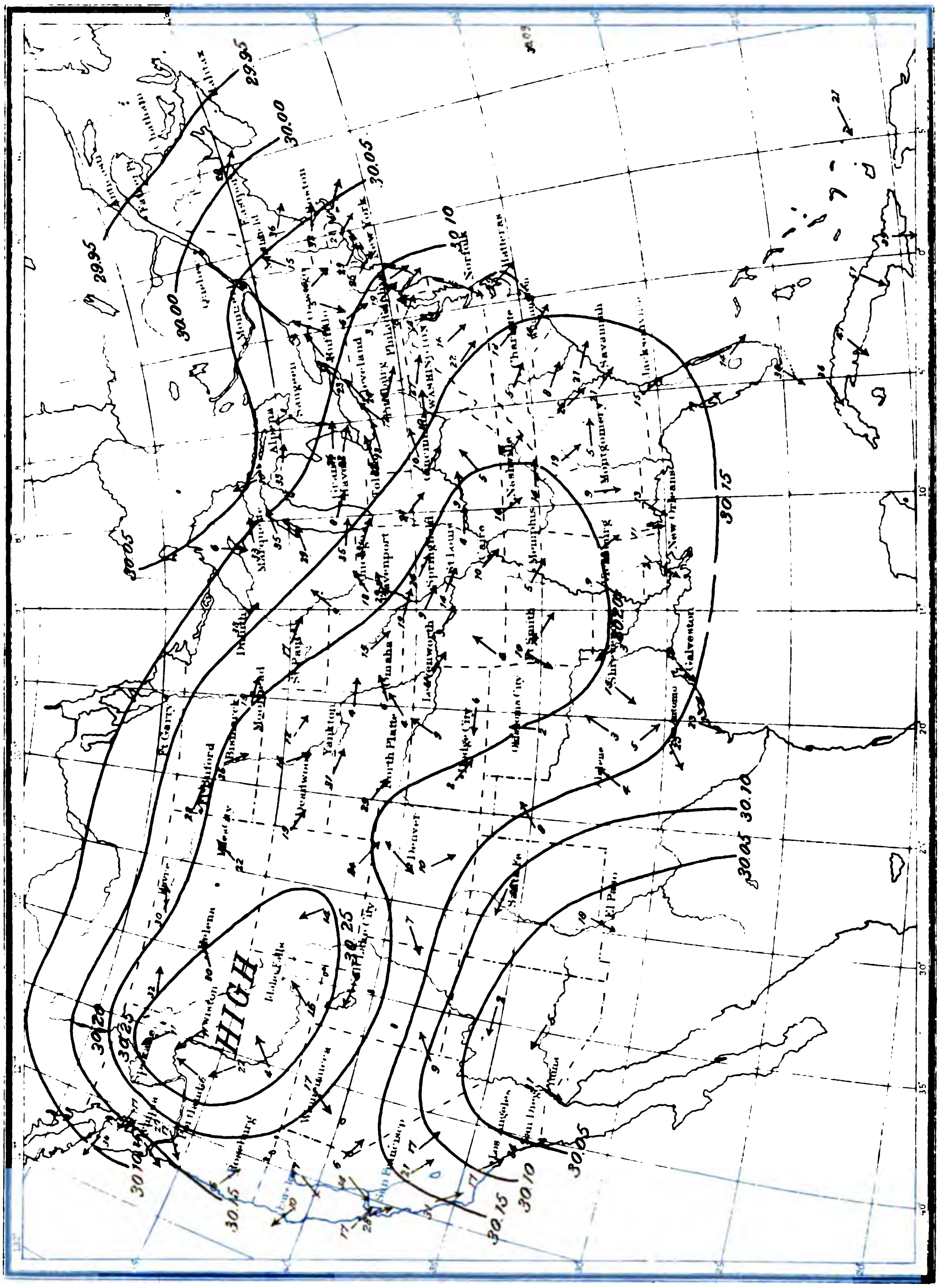
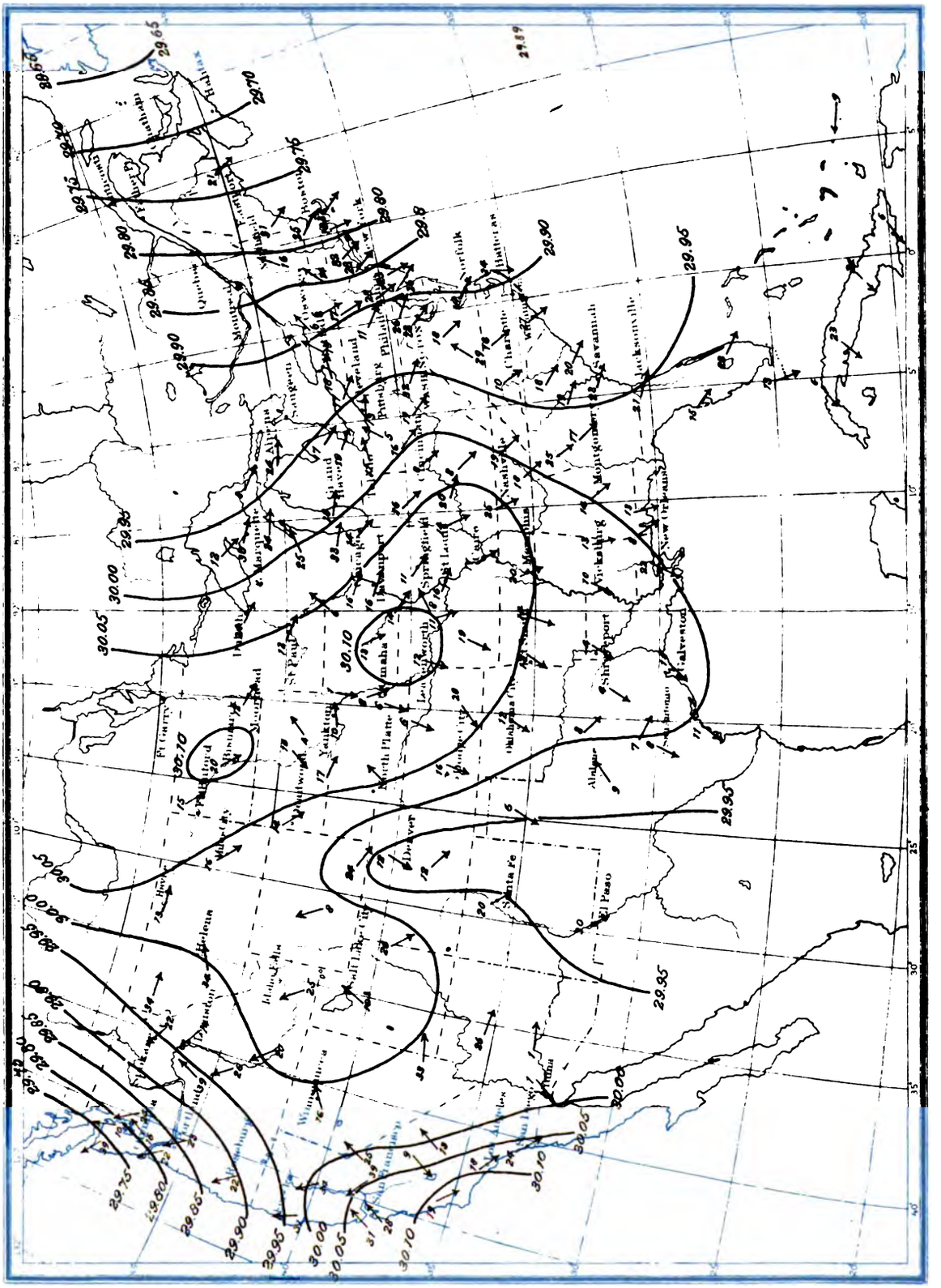


PLATE 2.

Sea-Level Pressure; Resultant Surface Winds. January, 1902.



Sea-Level Pressure; Resultant Surface Winds. February, 1902.



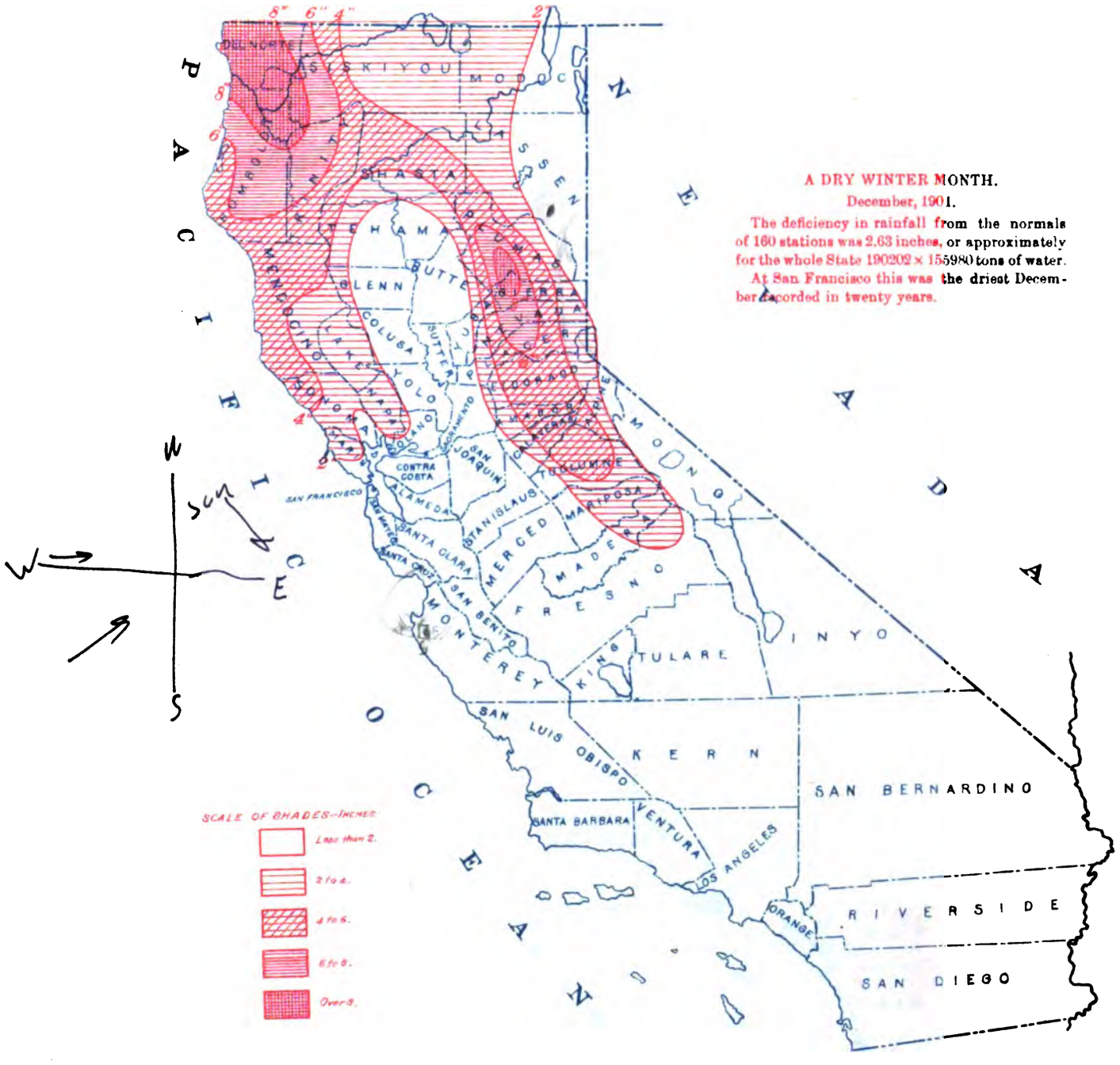

A DRY WINTER MONTH.
December, 1901.
The deficiency in rainfall from the normals of 160 stations was 2.63 inches, or approximately for the whole State 190202 × 155980 tons of water.
At San Francisco this was the driest December recorded in twenty years.
PACIFIC OCEAN
NEVADA
DEL NORTE
SISKIYOU
MODOC
HUMBOLDT
TRINITY
SHASTA
LASSEN
PLUMAS
MENDOCINO
LAKE
TEHAMA
GLENN
BUTTE
SIERRA
COLUSA
YOLO
SUTTER
NEVADA
PLACER
EL DORADO
SONOMA
NAPA
SACRAMENTO
SAN JOAQUIN
CONTRA COSTA
ALAMEDA
SAN FRANCISCO
STANISLAUS
TUOLUMNE
MARIPOSA
MERCED
MADERA
FRESNO
SANTA CLARA
SAN BENITO
MONTEREY
KINGS
TULARE
INYO
MONO
SAN LUIS OBISPO
KERN
SAN BERNARDINO
SANTA BARBARA
VENTURA
LOS ANGELES
ORANGE
RIVERSIDE
SAN DIEGO
SCALE OF SHADES—INCHES
Less than 2.
2 to 4.
4 to 6.
6 to 8.
Over 8.

PLATE 5.

PLATE 6.

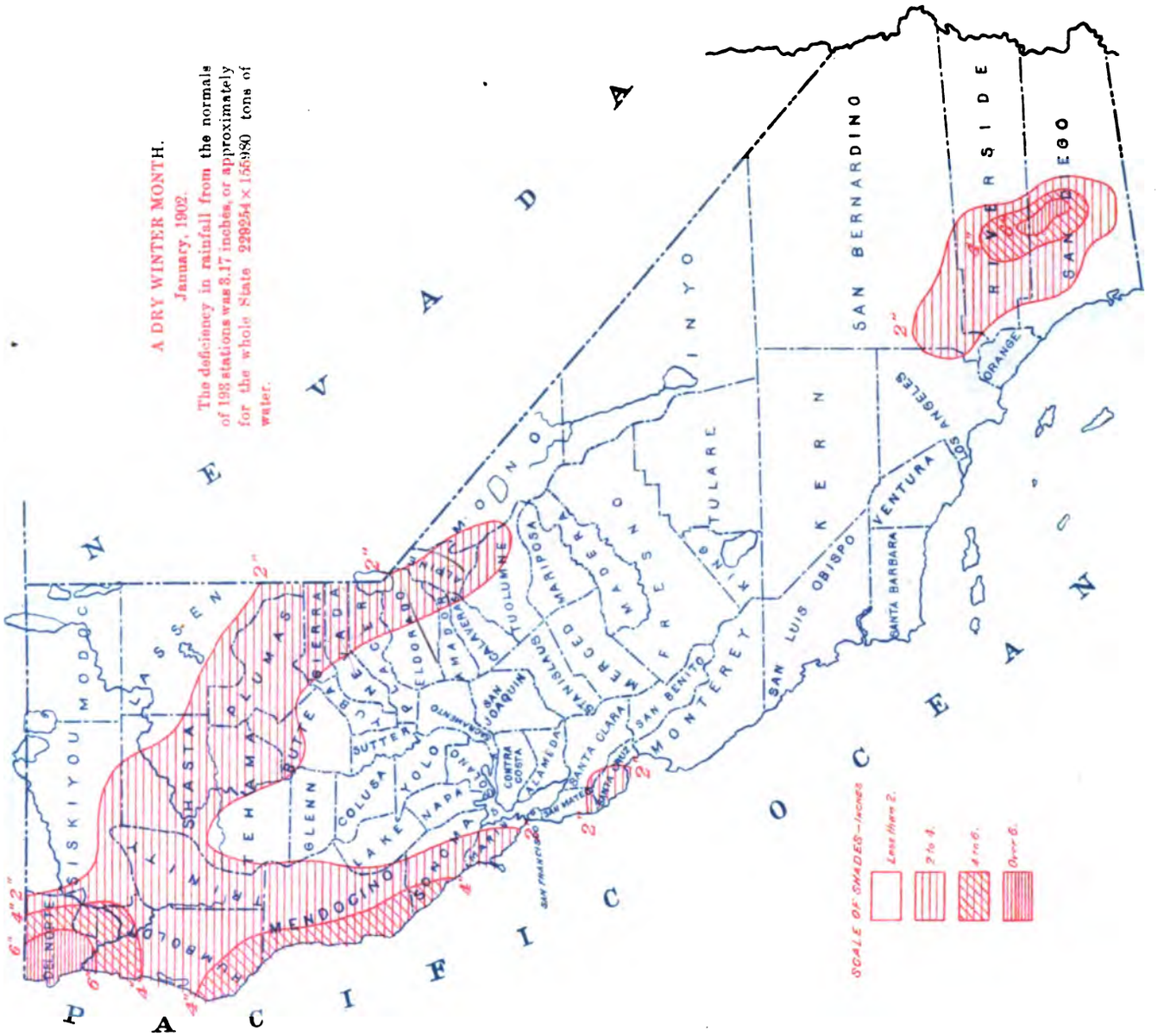
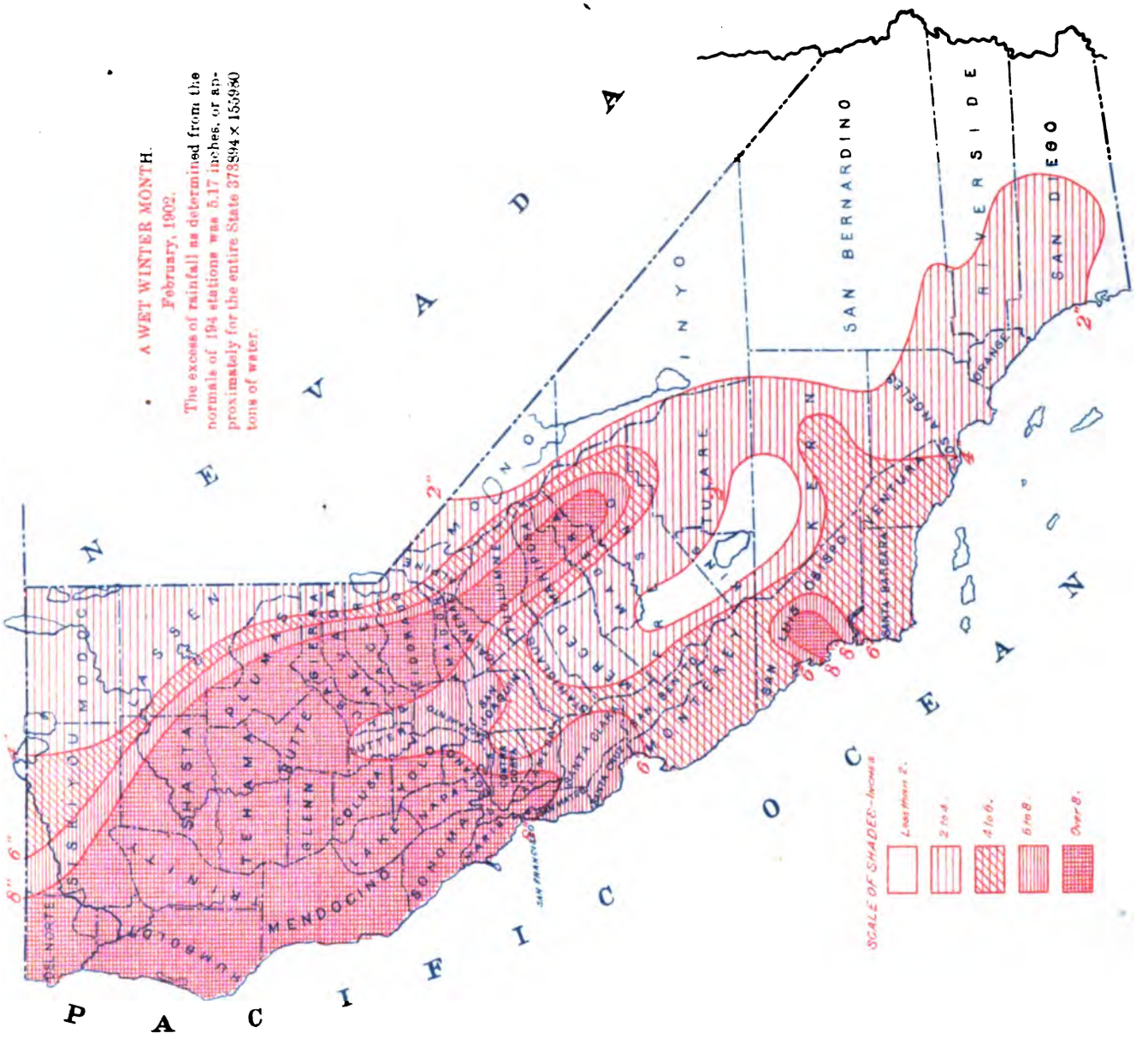

A DRY WINTER MONTH.
January, 1902.
The deficiency in rainfall from the normals of 193 stations was 3.17 inches, or approximately for the whole State 229254 × 155980 tons of water.
NEVADA
OREGON
PACIFIC OCEAN
SISKIYOU
MODOC
LASSEN
SHASTA
TEHAMA
PLUMAS
BUTTE
SIERRA
GLENN
COLUSA
YOLO
SUTTER
YUBA
NEVADA
PLACER
EL DORADO
ALPINE
AMADOR
CALAVERAS
TUOLUMNE
MARIPOSA
MADERA
FRESNO
KINGS
TULARE
KERN
INYO
MONO
SAN BERNARDINO
LOS ANGELES
ORANGE
RIVERSIDE
SAN DIEGO
VENTURA
SANTA BARBARA
SAN LUIS OBISPO
MONTEREY
SAN BENITO
SANTA CRUZ
SANTA CLARA
SAN MATEO
SAN FRANCISCO
CONTRA COSTA
ALAMEDA
SAN JOAQUIN
STANISLAUS
MENDOCINO
LAKE
NAPA
SONOMA
MARIN
DEL NORTE
SCALE OF SHADES—Inches
Less than 2.
2 to 4.
4 to 6.
Over 6.

PLATE 7.


A WET WINTER MONTH.
February, 1902.
The excess of rainfall as determined from the normals of 194 stations was 5.17 inches, or approximately for the entire State 373894 × 155980 tons of water.
NEVADA
PACIFIC OCEAN
SAN BERNARDINO
RIVERSIDE
SAN DIEGO
INYO
MONO
TULARE
KERN
VENTURA
LOS ANGELES
ORANGE
SANTA BARBARA
SAN LUIS OBISPO
MONTEREY
SAN BENITO
SANTA CLARA
SANTA CRUZ
SAN FRANCISCO
MENDOCINO
SONOMA
NAPA
YOLO
LAKE
COLUSA
GLENN
BUTTE
TEHAMA
SHASTA
PLUMAS
LASSEN
MODOC
SISKIYOU
DEL NORTE
HUMBOLDT
TRINITY
SCALE OF SHADES—Inches
Less than 2.
2 to 4.
4 to 6.
6 to 8.
Over 8.

TOTAL PRECIPITATION.

Based on 20 years' records and 1 year of normal rainfall, as determined from all available records.

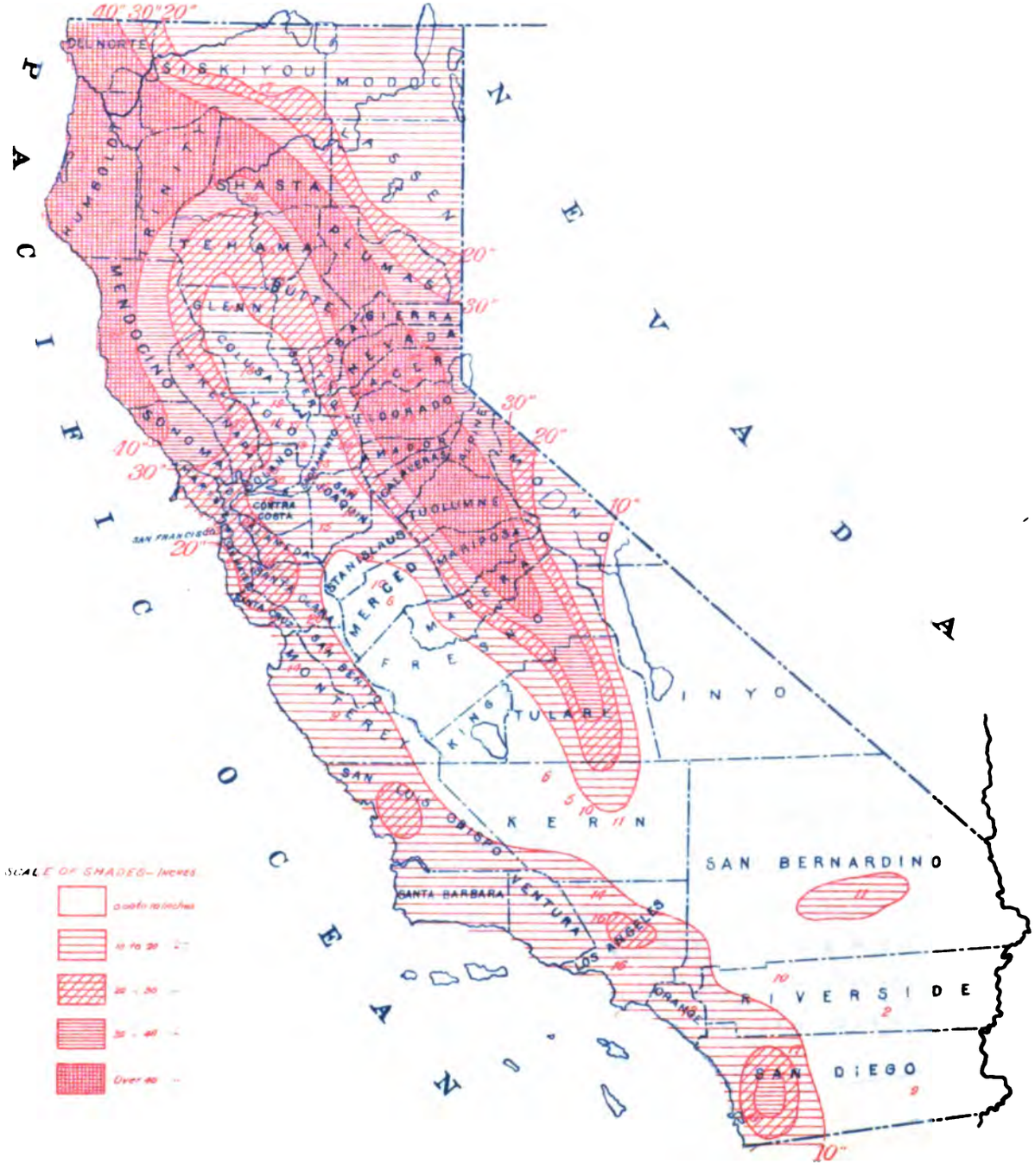


PLATE 8.

Mean Annual Isotherms and Prevailing Winds. Based on 20 years' normals.

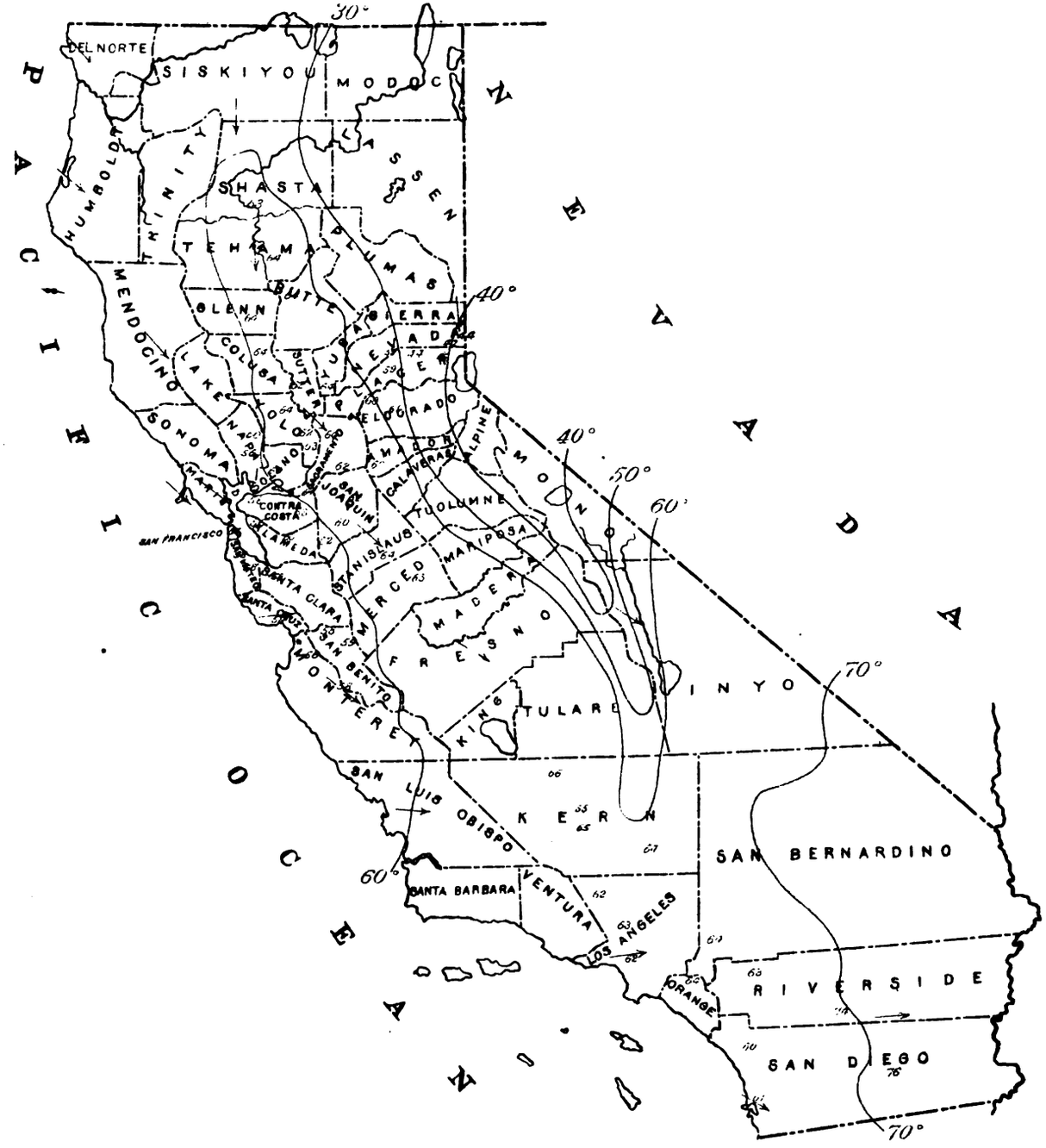


PLATE 9.

MONTHLY PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.	Season of—	Seasonal.
1849	.....	.....	.....	.....	.....	.....	0.00	0.00	0.00	3.14	8.66	6.20	.....	.....	.....
1850	8.34	1.77	4.53	0.46	0.00	0.30	0.00	0.00	0.33	0.00	0.92	1.05	17.40	1849-50	33.10
1851	0.72	0.54	1.94	1.23	0.67	0.02	0.00	0.02	1.03	0.21	2.12	7.10	15.58	1850-51	7.40
1852	0.58	0.14	6.68	0.26	0.32	0.00	0.00	0.00	0.00	0.80	5.31	13.20	27.29	1851-52	18.46
1853	3.92	1.42	4.86	5.37	0.38	0.00	0.00	0.04	0.46	0.12	2.28	2.32	21.17	1852-53	35.26
1854	3.88	8.04	3.51	3.12	0.02	0.08	0.00	0.01	0.15	2.43	0.34	0.87	22.45	1853-54	23.87
1855	8.67	4.77	4.64	5.00	1.88	0.00	0.00	0.00	0.00	0.00	0.67	5.76	26.39	1854-55	23.76
1856	9.40	0.50	1.60	2.94	0.76	0.08	0.02	0.00	0.07	0.45	2.79	3.75	22.31	1855-56	21.66
1857	2.45	8.59	1.62	0.00	0.05	0.12	0.00	0.05	0.00	0.93	3.01	4.14	20.98	1856-57	19.88
1858	4.36	1.83	5.55	1.55	0.84	0.05	0.05	0.16	0.00	2.74	0.69	6.14	23.46	1857-58	21.81
1859	1.28	6.32	3.02	0.27	1.55	0.00	0.00	0.02	0.03	0.05	7.28	1.57	21.39	1858-59	22.22
1860	1.64	1.60	3.99	3.14	2.86	0.09	0.21	0.00	0.00	0.91	0.58	6.16	21.18	1859-60	22.27
1861	2.47	3.72	4.08	0.51	1.00	0.08	0.00	0.00	0.02	0.00	4.10	9.54	25.52	1860-61	19.72
1862	24.36	7.53	2.20	0.73	0.74	0.05	0.00	0.00	0 00	0.52	0.15	2.35	38.63	1861-62	49.27
1863	3.63	3.19	2.06	1.61	0.28	0.00	0.00	0.00	0.03	0.00	2.55	1.80	15.10	1862-63	13.74
1864	1.83	0.00	1.52	1.57	0.78	0.00	0.00	0.21	0.01	0.13	6.68	8.91	21.64	1863-64	10.06
1865	5.14	1.34	0.74	0.94	0.63	0.00	0.00	0.60	0.24	0.26	4.19	0.58	14.06	1864-65	24.73
1866	10.88	2.12	3.04	0.12	1.46	0.04	0.00	0.00	0.11	0.00	3.35	15.16	36.28	1865-66	22.93
1867	5.16	7.20	1.58	2.36	0.00	0.00	0.00	0.00	0.04	0.20	3.41	10.69	30.64	1866-67	34.92
1868	9.50	6.13	6.30	2.31	0.03	0.23	0.00	0.00	0.00	0.15	1.18	4.34	30.17	1867-68	38.84
1869	6.35	3.90	3.14	2.19	0.08	0.02	0.00	0.00	0.12	1.29	1.19	4.31	22.59	1868-69	21.35
1870	3.89	4.78	2.00	1.53	0.20	0.00	0.00	0.00	0.03	0.00	0.43	3.38	16.24	1869-70	19.31
1871	3.07	3.76	1.05	1.89	0.23	0.01	0.00	0.02	0.00	0.07	2.81	14.36	20.44	1870-71	14.10
1872	4.00	6.90	1.59	0.81	0.18	0.04	0.01	0.00	0.04	0.11	2.79	5.95	22.42	1871-72	30.78
1873	1.58	3.94	0.79	0.43	0.00	0.02	0.01	0.08	0.00	0.83	1.16	9.72	18.56	1872-73	18.02
1874	5.66	2.21	3.36	0.90	0.66	0.14	0.00	0.00	0.02	2.69	6.55	0.33	22.52	1873-74	23.98
1875	8.01	0.32	1.30	0.10	0.22	1.02	0.00	0.00	0.00	0.24	7.27	4.15	22.63	1874-75	18.40
1876	7.55	4.92	5.49	1.29	0.24	0.04	0.01	0.01	0.38	3.36	0.25	0.00	23.54	1875-76	26.01
1877	4.32	1.18	1.08	0.26	0.18	0.01	0.02	0.00	0.00	0.65	1.57	2.66	11.93	1876-77	11.04
1878	11.97	12.52	4.56	1.06	0.16	0.01	0.01	T.	0.55	1.27	0.57	0.58	33.26	1877-78	35.18
1879	3.52	4.90	8.75	1.89	2.35	0.05	0.01	0.02	T.	0.78	4.03	4.46	30.76	1878-79	24.44
1880	2.23	1.87	2.08	10.06	1.12	0.00	0.00	0.00	0.00	0.05	0.33	12.33	30.07	1879-80	26.66
1881	8.69	4.65	0.90	2.00	0.22	0.69	0.00	0.00	0.25	0.54	1.94	3.85	23.73	1880-81	29.86
1882	1.68	2.96	3.45	1.22	0.21	0.04	0.00	0.00	0.26	2.66	4.18	2.01	18.67	1881-82	16.14
1883	1.92	1.04	3.01	1.51	3.52	0.01	0.00	0.00	0.42	1.48	1.60	0.92	15.43	1882-83	20.12
1884	3.94	6.65	8.24	6.33	0.23	2.57	T.	0.04	0.33	2.55	0.26	7.68	38.82	1883-84	32.38
1885	2.53	0.30	1.01	3.17	0.04	0.19	0.06	T.	0.11	0.72	11.78	4.99	24.90	1884-85	18.10
1886	7.42	0.24	2.07	5.28	0.37	0.01	0.23	T.	0.01	1.48	0.84	2.07	20.02	1885-86	33.05
1887	1.90	9.24	0.84	2.30	0.06	0.07	T.	0.01	0.29	T.	0.99	3.34	19.04	1886-87	19.04
1888	6.81	0.94	3.60	0.11	0.38	0.27	0.01	0.01	0.98	0.13	3.99	5.80	23.03	1887-88	16.74
1889	1.28	0.72	7.78	0.96	2.17	0.03	0.01	T.	T.	7.28	2.90	13.81	36.94	1888-89	28.86
1890	9.61	5.16	4.73	1.18	1.07	0.10	0.02	0.00	0.31	0.00	0.00	3.25	25.43	1889-90	45.85
1891	0.98	7.26	1.96	2.44	1.25	0.11	0.10	0.02	0.77	0.04	0.56	5.62	21.11	1890-91	17.58
1892	2.42	2.90	2.85	1.39	1.86	T.	0.00	0.00	0.02	1.65	3.91	5.08	22.08	1891-92	18.58
1893	3.05	2.75	4.08	1.03	0.15	0.03	0.02	0.00	0.21	0.16	4.18	2.25	17.91	1892-93	22.05
1894	5.99	2.69	0.60	0.50	1.31	0.56	T.	0.00	1.05	1.73	0.88	9.01	24.32	1893-94	18.47
1895	6.99	2.31	1.89	1.24	0.60	0.00	.....	0.00	0.77	0.11	1.78	1.43	17.13	1894-95	27.29
1896	8.14	0.28	2.85	5.16	0.72	0.00	.....	0.09	0.52	1.55	4.56	4.34	28.25	1895-96	21.25
1897	2.26	4.41	4.56	0.27	0.61	0.22	.....	T.	0.10	1.70	1.05	1.22	16.40	1896-97	23.43
1898	1.12	2.13	0.24	0.19	1.44	0.19	.....	T.	1.06	0.86	0.46	1.62	9.31	1897-98	9.38
1899	3.67	0.10	7.61	0.62	0.86	0.01	.....	T.	0.00	3.92	3.79	2.65	23.23	1898-99	16.87
1900	4.11	0.64	1.91	1.08	0.32	0.05	T.	T.	0.46	1.48	3.91	1.37	15.33	1899-00	18.47
1901	5.79	5.03	0.80	1.64	0.69	T.	T.	T.	0.78	0.64	3.48	0.90	19.75	1900-01	21.17
1902	1.23	7.27	2.65	0.98	1.05	0.00	T.	T.	T.	1.70	1.98	2.32	19.18	1901-02	18.98
Means	4.86	3.54	3.14	1.82	0.73	0.14	0.02	0.02	0.23	1.05	2.75	4.80	22.76	.....	22.75

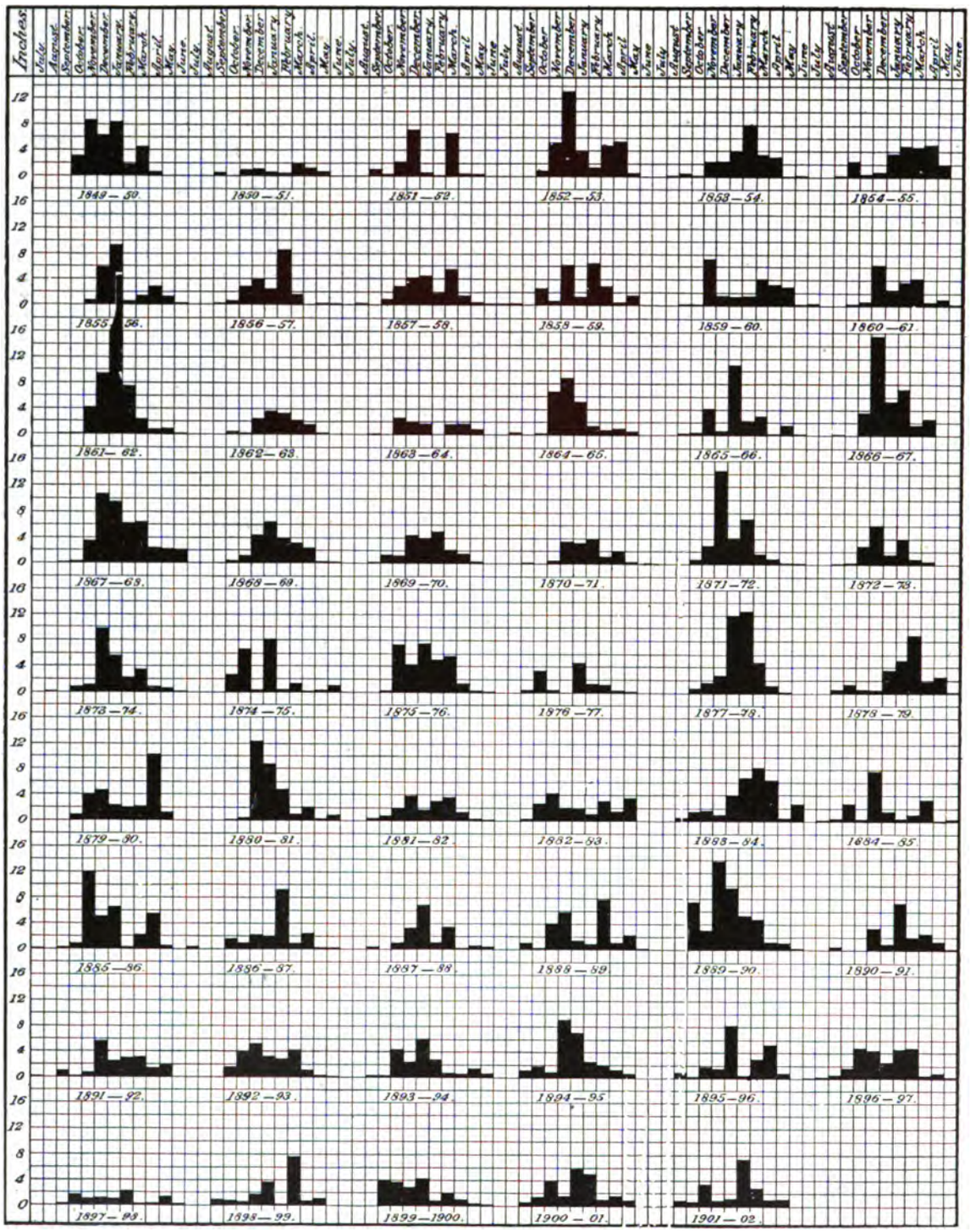


FIG. 1.—Seasonal rainfall at San Francisco, 1849–1902.

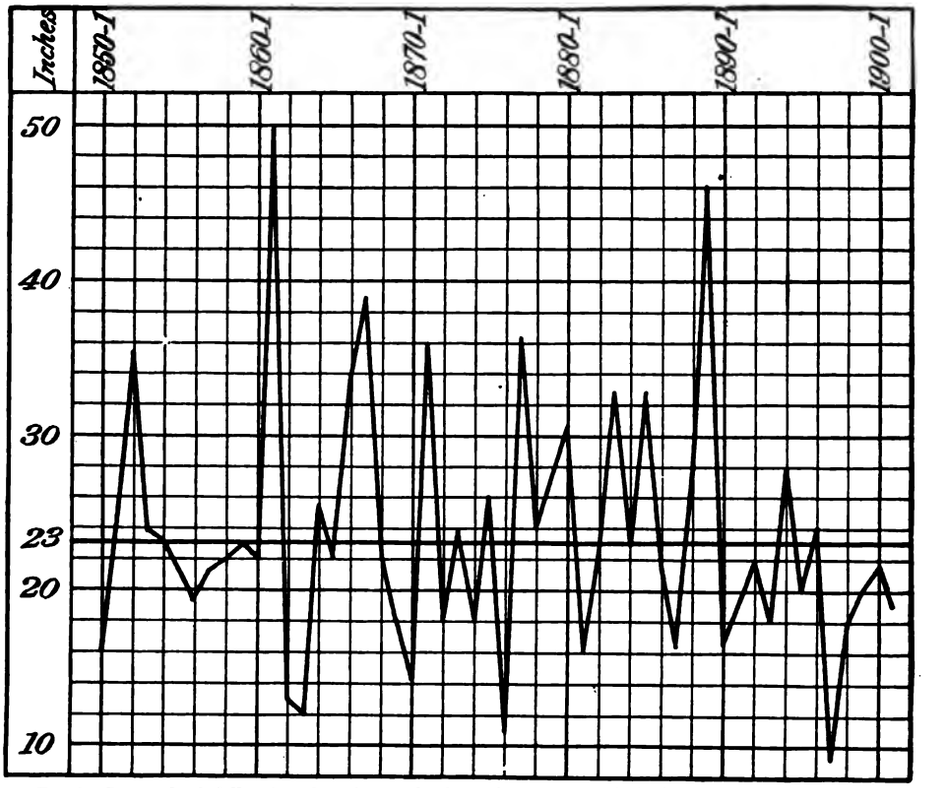


FIG. 2.—Seasonal rainfall at San Francisco, Cal. Intensity or amount in inches. (Normal, 23 inches.)

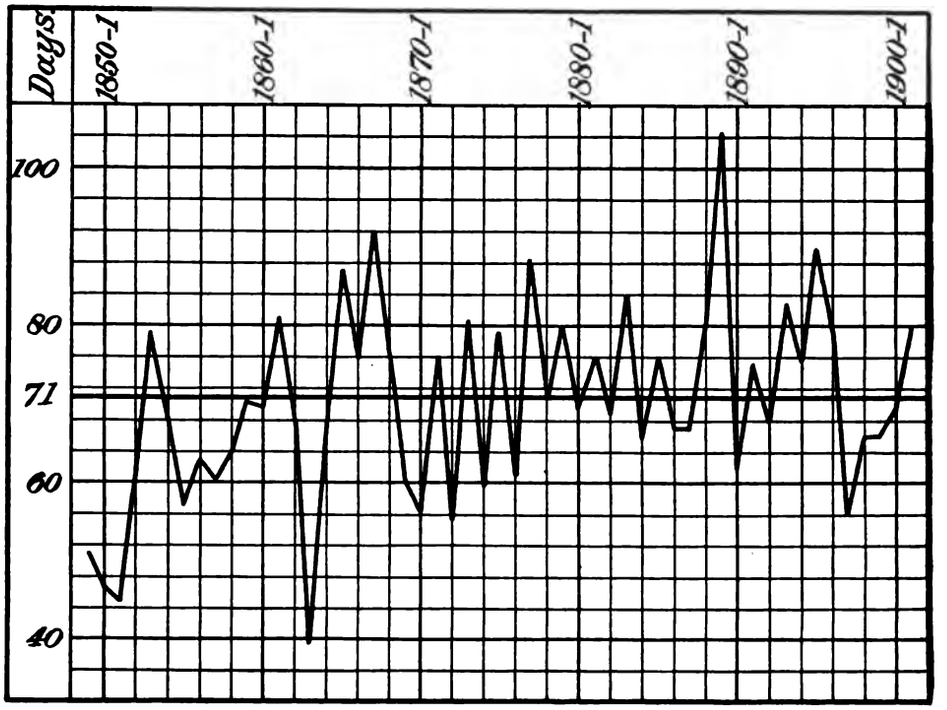


FIG. 3.—Seasonal rainfall at San Francisco, Cal. Frequency, or number of days. (Average, 71 days.)

A study of the charts in the Monthly Weather Review makes plain the positive character of the relationship between pressure distribution and the amount of rainfall. It will probably be found upon investigation that the frequency of rainfall as well as the intensity bear a direct relation to the pressure distribution as described above. In addition to the charts of the Monthly Weather Review excellent material for a further study of these relationships is to be found in the various international bulletins and synoptic charts of the various meteorological services.

The path of storms will be determined by the position of the great permanent areas. When the North Pacific low extends well to the southward in winter the storm tracks are well to the southward. And conversely if far to the north, the mean paths will also be far north.

MOVEMENT OF AREAS OF HIGH PRESSURE.

By referring to the charts published in the Monthly Weather Review it will be seen that, especially during winter months, areas of high pressure frequently lag in their eastern march over the country between the Sierra and Rocky Mountains. Such conditions are alluded to elsewhere as being generally accompanied by tule fog in the great valleys with temperatures ranging from 30° to 40° at sea level and from 40° to 50° at an elevation of about 1,000 feet. Warm weather with high northerly winds is apt to prevail in southern California during the early part of the winter, while, strangely enough, under somewhat similar conditions of pressure distribution during January and February, cool nights with frost in the morning may be expected in southern California.

During the prevalence of a slow moving area of high pressure it has been found that depressions of moderate depth sometimes develop on what may be called the periphery of the high to the south and southwest. During the months of November, December, and January under such conditions rain will begin falling without much warning along the coast from Point Conception southward. The forecast official can from the very nature of things give but little advance warning of such disturbances.

MOVEMENT OF AREAS OF LOW PRESSURE.

STORMS OF THE WEST PACIFIC OCEAN.

A discussion of these storms falls more properly under the province of the Hydrographic Office; but so interesting are the few facts which are fairly well established that brief mention must be made of them. The typhoons of the West Pacific have been studied with much care and skill by the staff of the observatory at Manila, and particular mention must be made of the work of the director of the observatory, P. José Algué, S. J., and P. Juan Doyle, S. J., subdirector of the observatory. Algué's "Baguios ó Ciclones Filipinos" and Doyle's "Tifones del Archipiélago Filipino y Mares Circunvecinos" are the best contributions to the subject.

Excellent directions for mariners and much information of a practical character is to be found in The Law of Storms in the Eastern Seas, by W. Doberck, director of the observatory at Hongkong. The observatories at Tokyo and Shanghai have also collected much material relating to storm development and motion on the Asiatic coast. Reference should also be made to the work of Dr. Paul Bergholz, director of the meteorological observatory at Bremen, who has given special attention to the storms of the East Indies. A translation of an address by this author on "The origin, paths, and limiting zones of the typhoons of the Orient," by Professor Abbe, was published in the Monthly Weather Review for September, 1899, and an abstract of this follows:

TYPHOONS OF THE PACIFIC OCEAN.

The following table shows at a glance a classification of the hurricanes of the Pacific Ocean:

Typhoons of the Pacific Ocean.

Group.	Months.	Trend of first branch.[a]	Latitude of vertex of parabola.	Trend of second branch.
1	December, January, February, March	North-northwest	15–19°	North-northeast.
2	April-May, May, October, November	Northwest	16–21°	Northeast.
3	June, July, August, September	Northwest by north.	21–25°	Northeast by east.

[a] Namely, when passing the small circle of latitude for Manila.

In general, the paths of these hurricanes are all parabolic. The average trend of the paths or the inclination to the meridian is much larger when they pass the latitude of Manila (14° 35′ north) than the average trend in the first branch. This is particularly noticeable during the months of the first group, and this evidently results from the fact that the latitude of the intersection [vertex?] of the path agrees very nearly with the latitude of Manila.

If now, with the assistance of the charts of isobars, we determine the conditions under which the cyclones are formed in the different months and groups of months, we find:

(*a*) The paths of the hurricanes of the Pacific Ocean in the first group start from the region between two areas of high pressure, one of which lies over the continent, the other over the Pacific Ocean. They lead toward the center of low pressure that occupies a portion of Bering Sea. The hurricanes of the China Sea keep within lower latitudes, namely, those which are reached by the limiting isobars of the Asiatic center of high pressure. In proportion as the centers of high pressure flatten out and withdraw during the period from January to March, so these extreme isobars retreat toward the north, and consequently the paths of the hurricanes extend farther north.

(*b*) With reference to the second group, the charts of monthly isobars show that the hurricanes of the Pacific Ocean in April and May move between the extreme isobars of the high-pressure areas of the Pacific Ocean and Asia.

(*c*) The paths of the hurricanes of the China Sea keep south of the isobar 760 mm., belonging to the high-pressure area of Asia and the low-pressure area of Hindostan. In October and November, in proportion as the Asiatic high-pressure area develops, these are pushed more and more into lower latitudes; moreover, the development of the area of low pressure in Hindostan is an index to these paths.

(*d*) The hurricanes of the Pacific Ocean, especially in October, pass along the broad zone between the Philippines and Japan, on the one hand, and the isobar of 760 mm. surrounding the high-pressure area of the Pacific. In November this zone becomes narrower by reason of the further development of the continental area of high pressure. The hurricanes of the Pacific Ocean belonging to this group also pursue paths toward the depression in the extreme north, which bears north-northeast from Manila.

(*e*) It is characteristic for the months of the third group that from June to September, at least to the middle of the latter month, the center of high pressure withdraws from the coast of Asia, and finally disappears. In connection with this the paths of the hurricanes attain higher latitudes, and those of the Pacific Ocean recurve very near the meridian of 125° east, therefore nearer to the Philippines than in the previous months. A single exception offers in the case of the hurricanes of the second half of September, whose recurving points are from 5° to 8° farther east. All hurricanes in the Pacific Ocean have as their ultimate destination the northern center of low pressure. The paths of the hurricanes of the China Sea trend more toward the north in proportion as the high pressure area of the continent moves northward, and do this, therefore, up to the end of August and the beginning of September; if, however, the low-pressure area moves toward the south about the beginning of September, then also the paths of these cyclones must follow it. Some of the July hurricanes after recurving follow paths going very nearly northward; they cross over the Yellow Sea and travel toward a small center of low pressure that has developed in Siberia.

The reader who is interested in the movements of the storms of the Asiatic coast may read with profit Bulletin H, Weather Bureau, 1900, on West Indian Hurricanes, by Prof. E. B. Garriott, since the typhoon on the Pacific Ocean and the hurricane of the West Indies are storms of the same general character and have much in common.

During the years 1895, 1896, and 1897 the Weather Bureau office at San Francisco made an attempt to trace the path of a disturbance across the ocean. By means of a large number of ship reports obtained through the courtesy of the Hydrographic Office the approximate path of a disturbance was determined. On the accompanying chart there is shown the path of a disturbance covering a period extending from November 20, 1895, to January 14, 1896. This path was determined by Prof. W. H. Hammon.

It may also be of interest to present a section of the same disturbance in its passage just preceding and following the point of recurvature.

To illustrate the difficulties of forecasting on the Pacific coast owing to the absence of reliable data over the ocean, the accompanying charts showing a forecast official's map with the conditions existing on the morning of January 13, 1896, and the real condition as subsequently determined by platting the observations of ships traversing the North Pacific. It is interesting to notice that a forecast of "rain" for the ensuing thirty-six hours might with the fuller knowledge obtained later have been changed to a long-range forecast covering a period of many days. As a matter of fact, there was no rain reported at San Francisco during the first twelve days of the month of January, 1896; but rain fell on every day from the 13th to the 21st and the total rainfall for this month was 8.14 inches, or nearly double the normal January rainfall.

LOW AREAS ON THE PACIFIC COAST.

Professor C. Abbe, in Monthly Weather Review, November, 1896, states that—

The daily chart for the northern hemisphere accompanying the bulletin of international simultaneous meteorological observations, 1875–1887, has long since familiarized the student with the fact that areas of low pressure frequently pursue very long paths for many consecutive days in their circuit around the north temperate regions. Those that start in the equatorial portions of the Atlantic or Pacific, after passing northwest and curving to the northeast, finally move east-northeastward between the forty-fifth and sixty-fifth parallels. Others start in the temperate regions, and without moving to the westward or recurving, pursue nearly the whole path in an east-northeast direction. In describing the history of areas of low pressure the authors who have contributed chapters to the successive Monthly Weather Reviews for nearly twenty-five years past have usually kept in mind the fact that "lows" which first appear in Washington, Oregon, Montana, and Alberta, or British Columbia, have probably originated at some point far to the west, and if occasionally the description of such a storm begins by speaking of it as originating over our North Pacific slope region, this is a slip of the pen which the reader may generally interpret without being misled by it.

On several occasions I have pointed out the fact that the isobars, and therefore the winds at a considerable distance above the earth's surface, have very little resemblance to the isobars and winds at sea level. In fact, the normal isobars at an elevation of 5,000 meters (which represents a surface a little above the summits of the Rocky Mountains) present a grand oval depression whose longest axis extends from the United States toward the north-northwest over the Saskatchewan and the Arctic regions to eastern Siberia. By studying a polar projection of the northern hemisphere we perceive that the whole upper circulation of winds and clouds and the general movement of areas of low pressure and high pressure are related to this distribution of pressure in the upper layers of air. When a storm center moves from Japan to the North Pacific, or from the latter to our Pacific coast, or from Alberta and Oregon southeastward, or from Texas and Kansas northeastward, it is describing some portion of a circuit about this great upper region of low pressure. It is simply a special whirl gliding about in the maelstrom that occupies one-half of the northern hemisphere. The axis of this oval polar maelstrom probably changes its position with considerable regularity, oscillating slowly to and fro; therefore the paths which the smaller disturbances describe will vary simultaneously with that; sometimes the storms will move far to the south either in America or in Russia in order to circumnavigate the southern extension of the longer axis of the oval; but will thereby diminish in intensity and almost die out. Sometimes a new whirl will start at the southern end of the oval; sometimes all the paths of the low areas will lie on the northern border of the United States and Canadian weather charts because the polar maelstrom has altered its dimensions and locations. Even the great subpermanent areas of low pressure in the North Atlantic and North Pacific are subordinate to the greater area of low pressure at the upper level and its attendant winds.

These remarks were made in discussing the following notes by Professors McAdie, Henry, and Hammon bearing upon the origin and paths of areas of low pressure on the Pacific coast:

A little study of weather types on the Pacific slope makes it plain that certain conditions traverse the country from the Pacific; thus to take at random the month of January, 1895, some of the deep lows that might have been supposed to originate over Manitoba or farther west over Assiniboia, Alberta, and British Columbia did not so originate, but are storms that can be traced distinctly in their onward march from the northern-central Pacific Ocean northwestward, often recurving and doubling in their paths, but preserving identity. Passing south of Sitka they

West Pacific Weather Map. December 7th, 1895..

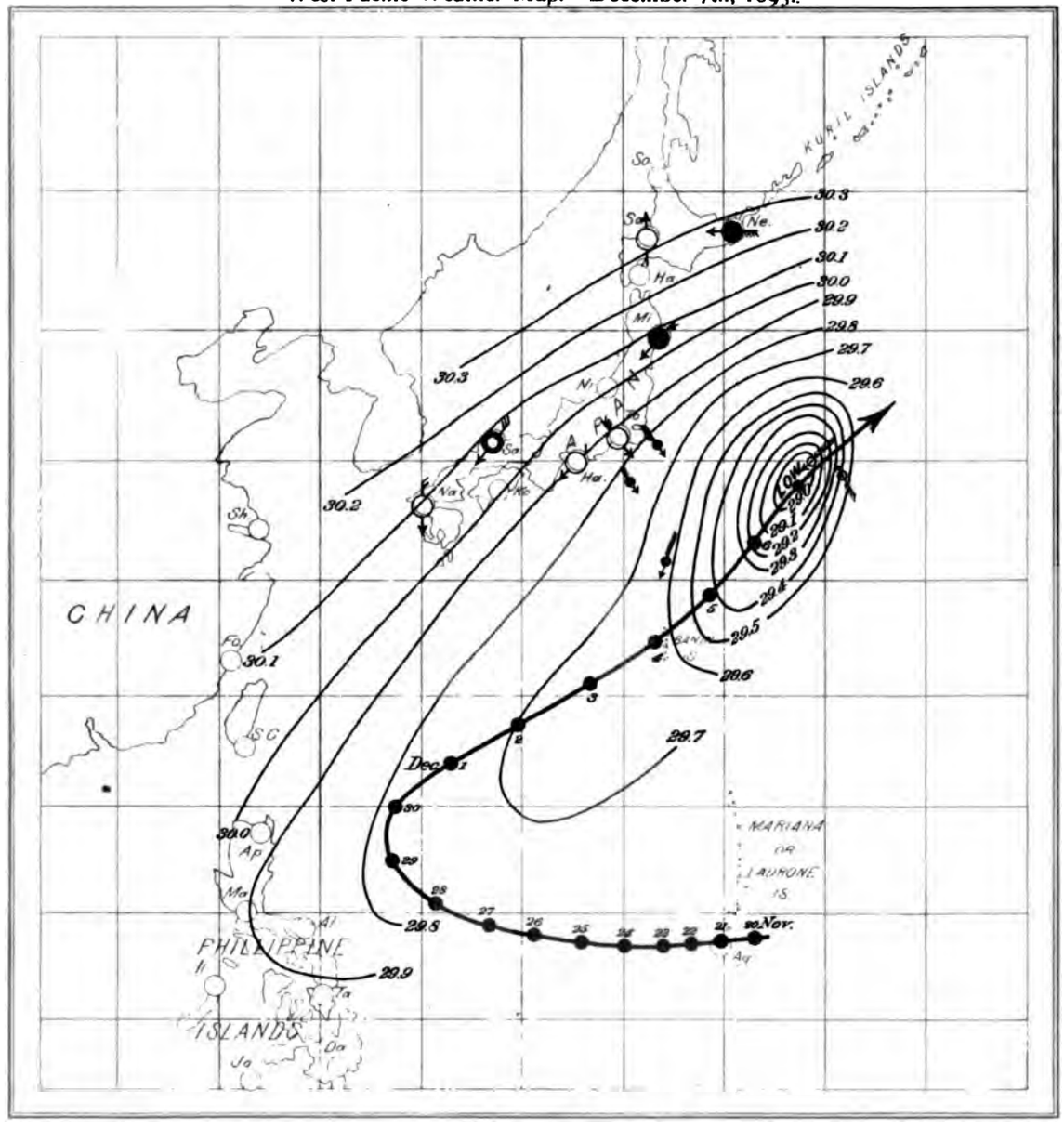
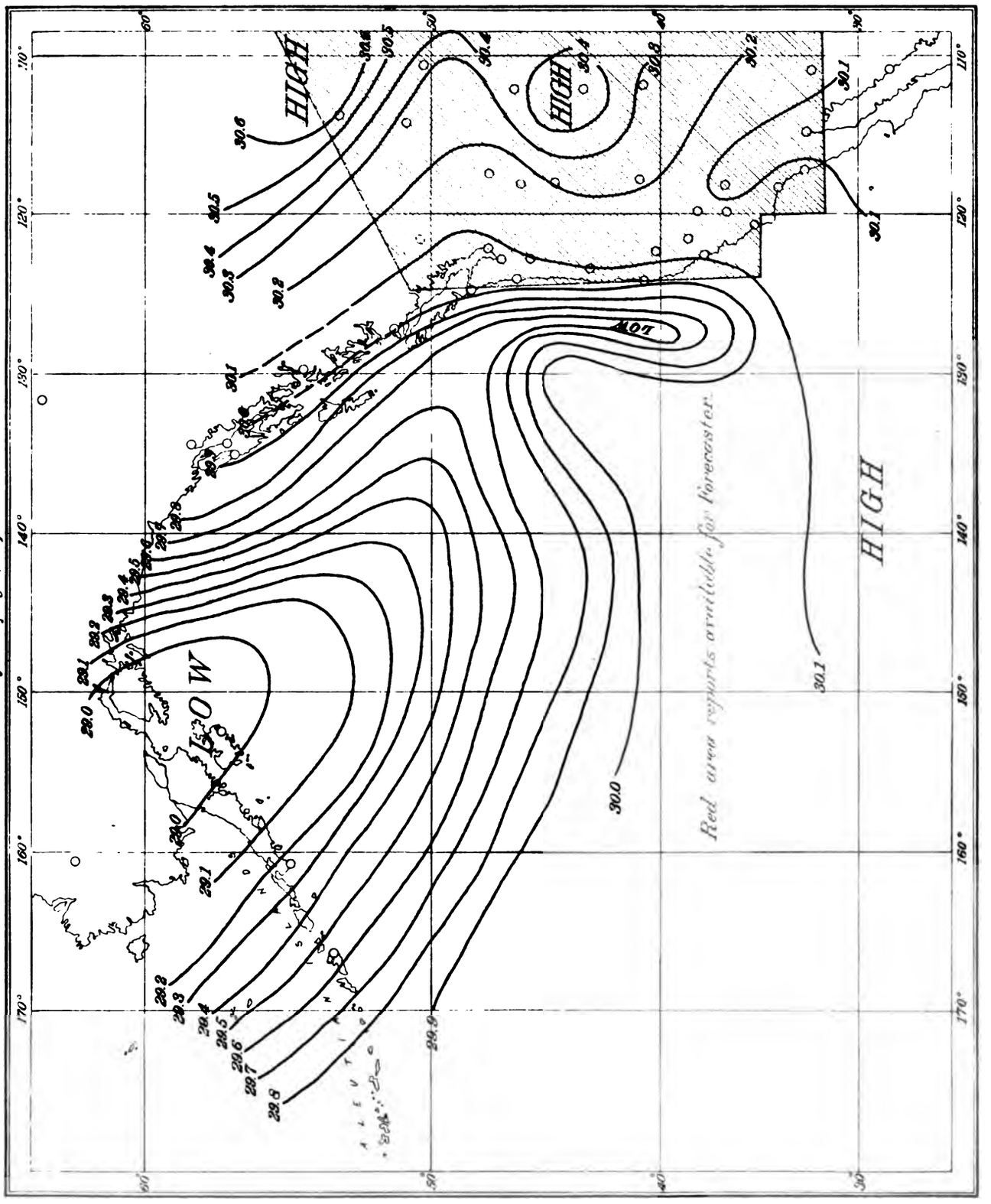


PLATE 10.

Daily Weather Chart—Pacific Ocean.
Probable conditions January 13th, 1896. Noon Greenwich.



Climatology of California. Approximate Path of Disturbance Traversing Pacific Ocean.

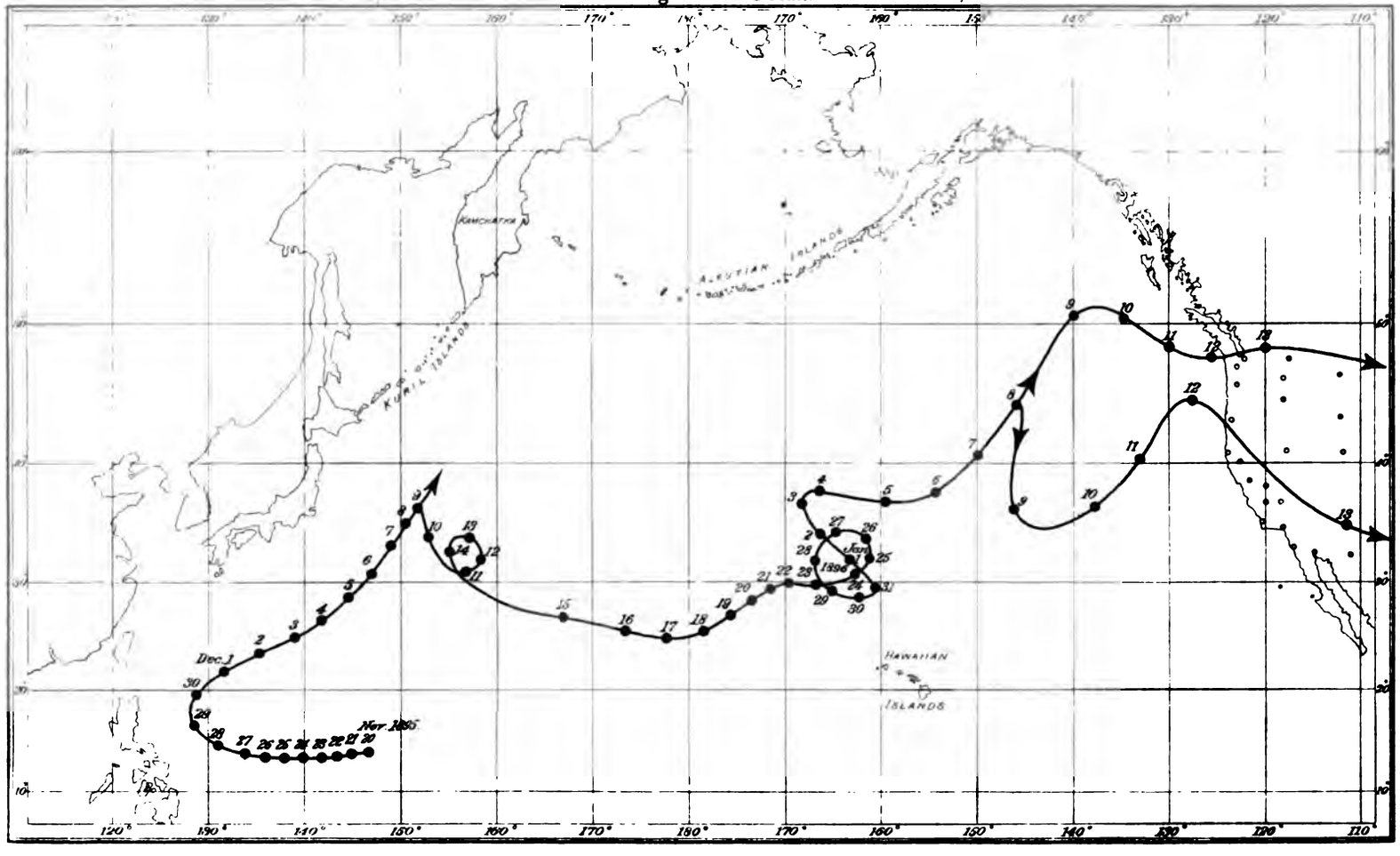


PLATE 12.

march eastward and reach Newfoundland in about one hundred and twenty hours. For example, a storm passed from Sitka to St. Johns between January 12 and 17. This storm did not originate in the Northwest Territory, but clearly came in from the Pacific. Where it did originate we do not know, but it is an error to locate its origin in any of the Northwest territories. And this is probably true of most storms which are said to originate over Athabasca or Saskatchewan. The truth is that storms first come into notice in these localities, but originate elsewhere.

* * * * * * *

The storms of the Pacific coast present a characteristic that is worthy of special study, viz, an apparent oscillation from the ocean to the land, and vice versa; that is to say, the low approaches the coast and partially disappears, reappearing within a period of twelve to thirty-six hours, and continuing this action until the storm finally disappears.

* * * * * * *

During the past two years I have been engaged, during my leisure time, in preparing weather charts of the Pacific Ocean. Some remarkable information has been obtained from these charts. The storms that approach the Pacific coast from the ocean frequently recurve several times after touching the coast, the number of oscillations being greater the farther south the storm approaches the coast.

* * * * * * *

Professor Abbe holds that—

The fact that a storm moves southward, ricochetting along the Pacific coast, and probably dying away as it progresses, harmonizes with the general theory of the movement of vortices. If the general distribution of pressure at sea level, and especially at 16,000 feet, is such as to give the storm center a general movement southward or southeastward along the Pacific coast, then the influences of the high mountain land in the interior of California and the plateau lands of Idaho, Nevada, Oregon, Utah, and Arizona are like those of a barrier against which a small atmospheric vortex may strike, only to be reflected several times in succession. A further special influence of these high lands is to furnish descending dry air whose mixture with the mojst air of the whirlwind rapidly diminishes the quantity of condensation and the sustaining power of the whole mechanism. The inverse conditions prevail on the east slope of the Rocky Mountains, where, therefore, a whirl once started is apt to increase in all characteristic phenomena. Possibly this process is illustrated by the low area of October 29, 1896, in regard to which Professor McAdie writes: "On Monday, October 26, 1896, a. m., a low, 29.70, with southeast winds, appeared on the Oregon coast. Taking a most unusual course, this storm passed southward and on the morning of the 27th was over central California (San Francisco, 29.56, southeast wind, 1.10 inches rainfall). By 10 o'clock of the same day the storm was moving down the San Joaquin Valley, and heavy rain was falling over southern California. On the morning of the 28th the pressure was 29.78 at El Paso, with rain, and the storm was out of our limits of observation, but just coming into prominence elsewhere."

PREVAILING AIR DRIFT AND OCEAN EFFECT.

The prevailing easterly drift of the atmosphere in temperate latitudes, causing the well-known winds from the west, is one of the prime factors in modifying the climate of the coast of California. This coast line, stretching for 10 degrees of latitude, is subjected to a steady indraft of air from the west. In this movement, together with the fact that to the west is the great Pacific Ocean, lies the secret of the difference in temperatures between the Atlantic and the Pacific coasts at places of like latitude. For some years there has been an impression that the milder climate of the Pacific coast was due to a warming influence of the Kuro Siwo, or Japan current. No reliable data exist to support such a belief, and it is quite unlikely that the Japan current plays any important part in modifying the climate of the Pacific coast. The active factors are, as said above, the prevailing easterly drift of the atmosphere and the proximity of the mass of water, a great natural conservator of heat. Further on, the equability of the mean annual temperatures along the coast of California, a distance of nearly 1,000 miles, is discussed, and the area might be extended to include practically the whole of the Pacific coast. One of the most noticeable differences between the climate of the Atlantic and Pacific seaboards is found in the trend of the isotherms, those of the Atlantic coast corresponding more or less with the parallels of latitude, while on the Pacific coast the isotherms run more nearly like meridians. Too much emphasis can not be laid upon the effect of these two factors, the easterly drift of the air and the proximity of the ocean in modifying climate. It is probable that if one of these conditions could be reversed and the general movement of the air in these latitudes be from east to west, marked differences in climatic conditions would result, and the Pacific coast might then have a rigorous climate.

TOPOGRAPHY.

The State of California extends from latitude 32° 40′ north to 42° north with a mean length of something less than 800 miles. The average width of the State is about 200 miles, and it has an area of 155,980 square miles, or 99,827,200 acres. The coast line of the State corresponds in position to that portion of the Atlantic coast extending from Boston to Savannah. Very few rivers, however, empty into the ocean, and in both topography and hydrography there is but little resemblance between the Atlantic and Pacific seaboards. The mountain ranges and other marked physical features play an important rôle in determining local climates, a discussion of which in detail will be given further on. It will not be out of place at this point, though, to call attention to the fact that the highest and lowest lands in the United States, excluding Alaska, are in California. Mount Whitney has an elevation of 4,427 meters (14,522 feet[a]); Mount Shasta, 4,383 meters (14,380 feet[b]); and by referring to the table of elevations[c] it will be seen that we know of at least 43 well-defined mountain peaks with elevations exceeding 3,048 meters (10,000 feet). On the other hand, at Salton and Volcano the depression is 80 meters (263 feet) below sea level. Death Valley, the bed of an old lake about 75 miles long and 6 miles wide, lies in southeastern California, just north of the great Mohave Desert.

A few illustrations showing the diversity of climatic conditions may be of interest. In the Colorado Desert, in the southern portion of the State, shade temperatures as high as 54° C. (130° F.) have been recorded. Mean monthly temperatures not much below 38° C. (100° F.) frequently occur at Volcano, Salton, Indio, Mammoth Tank, and other places in the great arid regions of southern California, and particularly in the Valley of the Colorado. In the Sierra, just north of Lake Tahoe, temperatures as low as −34° C. (−30° F.) have occurred. During the winter of 1898 a minimum thermometer exposed on one of the high Sierra peaks, Mount Lyell, recorded −27° C. (−17° F.). During the same period the temperature at Bodie reached a minimum of −34° C. (−30° F.).

The mean annual rainfalls, as might be expected, vary from 1 inch to 75 inches. At Mammoth Tank for twenty-three years the mean annual rainfall amounts to 1.81 inches, but here and at other stations there have been years when the rainfall did not exceed a trace.

At Upper Mattole the average annual rainfall is 81 inches, and in indvidual years rainfalls approximating 100 inches have occurred. The following are some single year rainfalls: Laporte 120 inches, 1896; 101 inches, 1898. Bowman's Dam 119 inches, 1884; 110 inches, 1896. Delta 111 inches, 1889; 100 inches, 1896. Upper Mattole 102 inches, 1896; 101 inches, 1889. Edmonton 102 inches, 1896. Snowfall is confined in general to the central and northern portions of the State and to the mountains of the south. At Summit an annual snowfall of 697 inches has been reported.

The coast line of nearly 1,000 miles shows a difference of but 10° F. in the mean annual temperatures of its northern and southern limits. At Eureka the temperature is 11° C. (51° F.); at San Francisco, 13° C. (56° F.), and at San Diego 16° C. (61° F.).

That the coast climates are very equable is shown by the following mean monthly departures. At Eureka the mean January temperature is 46°, or a departure of 5° from the annual mean; at San Francisco the mean January temperature is 50°, or a departure of 6° from the annual mean, and at San Diego the mean January temperature is 54°, or a departure of 7° from the annual mean.

Similarly for the month of July the temperature at Eureka is 56°, or 5° above the annual; at San Francisco, 59°, or 3° above the annual, and at San Diego 68°, or 7° above the annual.

The highest mean annual temperature found in the Colorado Desert is about 78°, and the lowest mean annual temperature for stations in the Sierra (Summit, for example) is 42°, or a total annual range of 36°.

The absolute range as stated above is from 130° F. (54° C.) to −30° F. (−35° C.); 160° F. (89° C.)

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[a] Authority, Langley. [b] Authority, U. S. Geological Survey. [c] Authority, The Sierra Club, of San Francisco.

The various elements of sunshine, humidity, wind velocity, and direction vary in different parts of the State to almost as great a degree as rainfall and temperature. Unfortunately continuous and systematic records of these elements are not available for most portions of the State.

The general movement of the air over the State is from the west and north, with strong southeasterly indrafts during the months of November, December, January, and February whenever marked cyclonic disturbances approach the State from the northwest. The general movement of the air in California is decidedly modified and certainly in the lowermost strata almost entirely controlled by the topography. Particularly interesting are the accentuated movements in the great valleys, as shown in the well-known "northers" of May and June. The prevailing westerly winds, wherever allowed access to the interior through gaps in the Coast Range, are greatly intensified and exhibit in both frequency and duration a well-marked relation to the temperatures prevailing in the interior.

One of the most trying climatic conditions prevailing in California is the so-called "norther" or hot north wind which, blowing in the great valleys, is both injurious to ripening crops and irritating to man and beast. May, June, and July are the months of greatest frequency. The condition is as a rule associated with the presence of an area of high pressure over the North Pacific Ocean and a deepening of the usual summer "low" over southeastern California and the Valley of the Colorado. Temperatures of 43° C. (110° F.) or more occur under these conditions. As these brisk northerly winds are very dry and dust laden, ripe fruit and wheat are seriously injured, while human beings and stock suffer greatly because of the irritating effects of the "norther."

In southern California a somewhat similar condition is known as the "Santa Ana." In all of these cases the air has been dynamically heated and dried, either by descensional movement, as when flowing down the mountains or by horizontal movement over superheated plains and deserts.

In the tabulated data which appears further on it will be noticed that the general conditions of temperature and rainfall are greatly modified by the local topography. In California, perhaps more so than in any other part of the habitable earth, a great diversity of climate exists. Within comparatively short distances one may pass from a climate requiring the lightest of summer garments to one requiring overcoats and heavy wraps. A short study of a relief map of California will throw much light on the cause of the great diversity of climate. The subject is discussed in detail in the chapter upon the "Climate of San Francisco," where a marked modification of the normal conditions is undoubtedly affected by the peculiar topography of the locality.

TABLE OF ELEVATIONS EXCEEDING 1,000 METERS (3,281 FEET) IN CALIFORNIA.

Many of the elevations have been supplied by Profs. George Davidson and J. N. Le Conte. For peaks in the High Sierra not included here see supplementary tables.

[Abstracted from Sierra Club's Publication No. 8.a]

Place.	County.	Elevation.		Latitude.	Longitude.	Authority.
		Meters.	Feet.			
				° ′	° ′	
Adams Peak	Sierra	2,570	8,432	39 54	120 7	Wheeler.
Alder Hill	Eldorado	2,373	7,785	38 37	120 15	U.S.G.S.
Alpine Peak or Round Top	Amador	3,179	10,430	38 39	120 00	Do.
Angora Peak	Eldorado	2,629	8,625	38 52	120 4	Do.
Ararat Mountain	Plumas	1,840	6,036	39 49	121 8	Do.
Argus Peak	San Bernardino	1,930	6,333	35 51	117 27	Wheeler.
Arnot Peak	Alpine	3,069	10,068	38 29	119 45	Do.
Ash Creek Butte	Siskiyou	2,506	8,422	41 26	122 3	U.S.G.S.
Awaia Point	Mariposa	2,110	6,920	37 45	119 32	Wheeler.
Bache Mountain (Loma Prieta)	Santa Clara	1,156	3,793	37 7	121 51	U.S.C. and G.S.
Bald Hill	Butte	1,820	5,973	39 57	121 29	U.S.G.S.
Bald Mountain	Shasta	1,709	5,607	40 55	121 23	Do.

a This table was compiled for the Sierra Club by Mark B. Kerr, C. E. and R. H. Chapman, of the U. S. Geological Survey.

TABLE OF ELEVATIONS EXCEEDING 1,000 METERS (3,281 FEET) IN CALIFORNIA—Continued.

Place.	County.	Elevation.		Latitude.	Longitude.	Authority.
		Meters.	Feet.			
				° ′	° ′	
Bald Mountain	Plumas	1,804	5,918	39 42	120 59	U. S. G. S.
Do	Eldorado	1,406	4,613	38 54	120 42	Do.
Do	Fresno	2,419	7,936	36 41	119 00	Whitney.
Bald Rock	Butte	1,006	3,301	39 38	121 20	U. S. G. S.
Bald Top	Sierra	1,791	5,878	39 34	120 57	Do.
Bally Mountain	Shasta	1,904	6,246	40 34	122 38	Do.
Banner Hill	Nevada	1,189	3,904	39 15	120 58	Do.
Basket Dome	Mariposa	2,317	7,604	37 46	119 33	Wheeler.
Bear Ranch Hill	Plumas	1,494	4,903	39 50	121 21	U. S. G. S.
Beatitude Mountain	Mariposa	2,015	6,611	37 42	119 41	Wheeler.
Beckwith Butte	Plumas	2,209	7,248	39 46	120 26	U. S. G. S.
Bent Mountain	do	2,387	7,831	40 13	121 22	Wheeler.
Bidwell Peak	Modoc	2,608	8,557	41 57	120 8	Do.
Big Bar Hill	Butte	1,347	4,419	39 46	121 25	U. S. G. S.
Black Butte	Lassen	2,912	9,553	40 34	121 20	Wheeler.
Black Crater	Siskiyou	2,636	8,650	41 81	122 7	U. S. G. S.
Black Fox Mountain	do	2,031	6,664	41 22	121 52	Do.
Blue Mountain	Modoc	1,771	5,811	41 48	180 49	Do.
Bogus Mountain	Siskiyou	1,408	4,622	41 50	122 22	Do.
Bowman Mountain	Nevada	2,265	7,429	39 26	120 38	Do.
Brewer Mountain	Kern	4,137	13,573	36 40	118 30	Whitney.
Broderick Mountain	Mariposa	2,022	6,635	37 44	119 32	Wheeler.
Browns Peak	San Bernardino	1,643	5,392	35 41	117 1	Do.
Buckeye Peak	Mono	3,583	11,755	38 10	119 23	Do.
Buckhorn Peak	Mariposa	1,156	3,794	37 40	120 7	U. S. G. S.
Buckingham Peak	do	1,409	4,622	37 35	119 53	Wheeler.
Bullion Peak	do	1,284	4,215	37 33	120 4	U. S. G. S.
Bully Choop Mountain	Shasta-Trinity	2,156	7,073	40 32	122 45	Do.
Burney Butte	Shasta	2,402	7,880	40 49	121 38	Do.
Bust Rock	Tuolumne	2,791	9,157	38 12	119 47	Wheeler.
Butte Mountain	Plumas	2,387	7,831	40 18	121 23	Do.
Cahto Mountain	Mendocino	1,293	4,246	39 41	123 35	U. S. C. and G. S.
Callahans Peak or Scott Mountain	Siskiyou-Trinity	2,377	7,800	41 10	122 40	U. S. G. S.
Cammal Peak	Plumas	1,756	5,760	39 43	121 6	Do.
Canon Creek Peak or Scott Mountain [a]	Trinity	2,744	9,002	41 5	123 10	U. S. C. and G. S.
Cap of Liberty	Mariposa	2,152	7,062	37 43	119 32	Wheeler.
Carmel Mountain	Monterey	1,346	4,415	36 23	121 47	U. S. C. and G. S.
Cary Peak	Alpine	2,652	8,700	38 47	119 50	U. S. G. S.
Cascade Cliff	Mariposa	2,463	8,084	37 43	119 29	Wheeler.
		2,355	7,728			
Castac Lake	Kern	1,069	3,500	34 50	118 55	S. C. (Kerr).
Castle Mountain	San Luis Obispo	1,325	4,349	35 56	120 20	U. S. C. and G. S.
Castle Rock	Tuolumne	3,009	9,872	38 15	119 50	Wheeler.
Castle Peak	Nevada	2,786	9,139	39 22	120 21	U. S. G. S.
Do	Tuolumne-Mono	3,962	13,000	38 3	119 15	Whitney.
Cedar Peak	Modoc	2,531	8,308	41 36	120 16	Wheeler.
Chauchelulla Mountain	Trinity	1,973	6,475	40 30	122 59	U. S. G. S.
Chelone Mountain	San Benito	1,158	3,800	36 28	121 5	Whitney.
Chiquito Peak	Madera	2,517	8,257	37 21	119 25	Wheeler.
Choual Mountain	Santa Clara	1,076	3,530	37 8	121 50	Whitney.
Cinder Cone	Lassen	2,105	6,907	40 32	121 19	Wheeler.
Cisco Butte	Placer	2,032	6,665	39 17	120 34	Do.
Claremont Hill	Plumas	2,133	6,999	39 53	120 55	Do.
Clermont Hill	do	2,137	7,014	39 53	120 57	U. S. G. S.
Clouds Rest	Mariposa	3,021	9,912	37 46	119 29	Wheeler.
Cold Spring Hill	Placer	1,128	3,699	39 10	120 52	U. S. G. S.
Colorado Hill	Alpine	2,286	7,500	38 40	119 43	Do.
Conejo Peak	Ventura	1,009	3,311	34 7	118 55	Wheeler.
Conness Mountain	Mono	3,830	12,566	37 58	119 19	U. S. C. and G. S.
Cooks Point	Kern	1,931	6,336	35 37	118 27	Wheeler.
Corcoran (same as Sheep)	Inyo	4.208	14,059	36 34	118 9	Le Conte.

[a] Approximate position.

TABLE OF ELEVATIONS EXCEEDING 1,000 METERS (3,281 FEET) IN CALIFORNIA—Continued.

Place.	County.	Elevation.		Latitude.	Longitude.	Authority.
		Meters.	Feet.			
				° ′	° ′	
Cose Peak	Inyo	2,568	8,425	36 12	117 46	Wheeler.
Cottonwood Peak	Tuolumne	2,327	7,633	37 55	119 44	Do.
Crater Peak	Shasta	2,659	8,724	40 42	121 35	U. S. G. S.
Crater (Rhett Lake)	Modoc	1,465	4,807	41 53	121 52	Do.
Crystal Peak	El Dorado	3,053	10,015	38 54	120 9	Do.
Do	Sierra	2,569	8,428	39 28	120 3	Do.
Crossman Mountain	Amador	1,214	3,985	38 27	120 32	Do.
Cucamonga Peak	Los Angeles	2,599	8,529	34 12	117 35	Wheeler.
Dardanelle Cone	Tuolumne	2,907	9,538	38 23	119 53	U. S. G. S.
Deer Knob	El Dorado	1,718	5,635	38 54	120 26	Do.
Devil Peak	do	1,628	5,340	38 57	120 32	Do.
Do	Placer	2,347	7,700	39 17	120 26	Do.
Do	Mariposa	2,129	6,985	37 32	119 44	Wheeler.
Diablo Mountain	Contra Costa	1,173	3,849	37 53	121 55	U. S. C. and G. S.
Diamond Mountain	Lassen	2,337	7,667	40 18	120 38	Wheeler.
Disaster Peak	Alpine	3,075	10,085	38 27	119 42	Do.
Dome Mountain	Siskiyou	2,056	6,743	41 46	121 39	U. S. G. S.
Double Head	Modoc	1,687	5,537	41 46	121 8	Do.
Double Peak	Kern	2,518	8,263	35 1	118 29	Wheeler.
Duckwalls Mountain	Tuolumne	1,786	5,859	37 58	120 7	U. S. G. S.
Duncan Peak	Placer	2,118	7,177	39 8	120 30	Do.
Dyer Peak	Lassen-Plumas	2,246	7,369	40 15	121 1	Wheeler.
Eagle Lake	Lassen	1,558	5,115	40 35	120 45	Do.
Eagle Peak	Mariposa	2,362	7,751	37 44	119 37	Do.
Do	Modoc	3,029	9,933	41 17	120 13	Do.
Do	Tuolumne	2,586	8,484	38 16	119 52	Do.
Eagle Tower	Mariposa	2,183	7,162	37 45	119 36	Do.
Eddy Mountain	Siskiyou	2,790	9,151	41 19	122 30	U. S. G. S.
El Cajon Mountain	San Diego	1,122	3,680	32 55	116 49	Do.
El Capitan	Mariposa	2,137	7,012	37 44	119 38	Wheeler.
Elephants Back	Alpine	2,937	9,635	38 41	119 59	U. S. G. S.
Ellis Mountain	Placer	2,666	8,745	39 4	120 11	Do.
Elwett Mountain	Plumas	2,391	7,846	39 42	120 41	Do.
English Mountain	Nevada	2,561	8,404	39 27	120 33	Do.
Eureka Mountain	Plumas	2,283	7,490	39 45	120 43	Do.
Fall Creek Mountain	Nevada	2,296	7,532	39 24	120 38	Do.
Feather Lake	Lassen	1,855	6,085	40 33	121 16	Wheeler.
Fillmore Mountain	Sierra	2,382	7,816	39 43	120 51	U. S. G. S.
Findley Peak	Nevada	2,277	7,470	39 29	120 34	Do.
Fire Place Bluff	Mariposa	2,039	6,688	37 44	119 41	Wheeler.
Fish Valley Peak	Mono	3,275	10,749	38 25	119 37	Do.
Franklin Hill	Plumas	1,868	6,132	39 46	121 4	U. S. G. S.
Fredonyer Peak	Lassen	2,436	7,995	40 32	120 41	Do.
Freel Peak	El Dorado	3,319	10,900	38 51	119 54	Do.
Gavilan Peak	San Benito	1,030	3,381	36 45	121 30	Whitney.
Glacier Point	Mariposa	2,199	7,211	37 44	119 34	Wheeler.
Glass Mountain	Siskiyou	2,393	7,850	41 37	121 30	U. S. G. S.
Gleason Peak	Los Angeles	1,979	6,493	34 24	118 11	Wheeler.
Goddard Mountain	Fresno	4,124	13,528	37 6	118 50	Whitney.
Goose Lake	Modoc	1,430	4,697	41 50	120 25	Wheeler.
Goose Nest Mountain	Siskiyou	2,575	8,447	41 44	122 14	U. S. G. S.
Granite Dome	Tuolumne	3,162	10,373	38 12	119 45	Wheeler.
Grass Valley Hill	Plumas	1,887	6,196	39 45	120 59	U. S. G. S.
Grayback	Del Norte	1,777	5,830	41 59	123 31	U. S. C. and G. S.
Grizzly Hill	Plumas	1,958	6,424	39 50	121 11	U. S. G. S.
Grizzly Peak	Shasta	2,073	6,804	41 8	121 59	Do.
Do	Plumas	2,343	7,687	39 52	120 32	Do.
Do	Mariposa	1,892	6,207	37 43	119 33	Wheeler.
Do	San Bernardino	3,573	11,723	34 10	116 50	Do.
Guide Peak	Placer	2,447	8,028	39 2	120 17	Do.
Half Dome	Mariposa	2,688	8,823	37 44	119 32	Do.
Hamilton Mountain	Santa Clara	1,283	4,209	37 20	121 39	U. S. C. and G. S.
Harkness Peak	Plumas	2,705	8,875	40 26	121 18	Wheeler.

TABLE OF ELEVATIONS EXCEEDING 1,000 METERS (3,281 FEET) IN CALIFORNIA—Continued.

Place.	County.	Elevation.		Latitude.	Longitude.	Authority.
		Meters.	Feet.			
				° ′	° ′	
Haskells Peak	Sierra	2,477	8,126	39 40	120 33	Wheeler.
Hat Peak	Lassen	2,338	7,676	41 4	120 5	Do.
Hawkins Peak	Alpine	3,068	10,060	38 44	119 52	U.S.G.S.
Hayden Hill	Lassen	1,940	6,367	41 0	120 50	Do.
Haystack Peak	Tuolumne	3,008	9,867	38 6	119 41	Wheeler.
Hepsidam	San Benito	1,352	4,438	36 19	120 49	U.S.C. and G.S.
Highland Peak	Alpine	3,339	10,955	38 33	119 45	U.S.G.S.
Hoffman Mountain	Siskiyou	2,444	8,018	41 37	121 32	Do.
Do	Tuolumne-Mariposa	3,314	10,872	37 52	119 30	Whitney.
Hoopah Mountain	Humboldt	1,234	4,050	41 5	123 47	U.S.C. and G.S.
Hot Springs Peak	Lassen	2,344	7,692	40 22	120 7	Wheeler.
Houghs Peak	Plumas	2,210	7,254	40 3	120 53	U.S.G.S.
Hulls Mountain	Mendocino	2,107	6,914	39 31	122 57	U.S.C. and G.S.
Humboldt Mountain	Humboldt	1,013	3,325	40 59	123 58	Do.
Iaqua Butte	do	1,091	3,580	40 40	123 52	Do.
Ingalls Mountain	Plumas	2,586	8,484	39 59	120 38	U.S.G.S.
Indian Rock	Mariposa	2,579	8,462	37 47	119 33	Wheeler.
Iron Mountain	Humboldt	1,238	4,060	39 48	123 29	U.S.C. and G.S.
Jackson Mountain	Plumas	2,019	6,625	39 51	120 39	U.S.G.S.
Jackson Peak	Nevada	2,557	8,390	39 27	120 33	Wheeler.
Jeff Davis Peak	Alpine	2,743	9,000	38 38	119 53	U.S.G.S.
Jobs Peak	do	3,231	10,600	38 51	119 52	Do.
Jobs Sister	do	3,299	10,820	38 51	119 53	Do.
Jura Mountain	Plumas	1,920	6,300	40 4	120 48	Do.
Kai-al-au-wa Hill	Mariposa	2,734	8,969	37 46	119 39	Wheeler.
Kettle Rock	Plumas	2,392	7,849	40 8	120 44	U.S.G.S.
Keystone Mountain	Sierra	2,115	6,938	39 32	120 40	Do.
King Peak	Humboldt	1,300	4,265	40 9	124 7	U.S.C. and G.S.
Kivet Mountain	do	1,274	4,180	41 14	123 46	Do.
Lady Bug Peak	Sierra	2,548	8,361	39 29	120 3	U.S.G.S.
Larrabee Butte	Humboldt	1,225	4,020	40 25	123 42	U.S.C. and G.S.
Lassen Peak	Shasta-Tehama-Plumas.	3,181	10,437	40 30	121 30	Wheeler.
Lassic Mountain	Humboldt-Trinity	1,794	5,885	40 20	123 33	U.S.C. and G.S.
Leaning Tower	Mariposa	1,777	5,830	37 43	119 38	Wheeler.
Leavitte Peak	Tuolumne	3,522	11,553	38 16	119 41	Do.
Leek Spring Hill	Eldorado	2,329	7,640	38 37	120 17	U.S.G.S.
Leviathan Peak	Alpine	2,739	8,985	38 41	119 36	Do.
Limestone Point	Plumas	1,771	5,811	39 51	120 54	Do.
Lincoln Mountain	Placer	2,561	8,403	39 18	120 20	Do.
Linn Mountain	Tehama	2,628	8,604	40 1	122 47	Do.
Little Antelope Peak	Mono	2,863	9,392	38 20	119 37	Wheeler.
Little Klamath Lake	Siskiyou	1,273	4,175	41 55	121 44	U.S.G.S.
Lola Mountain	Nevada	2,794	9,167	39 26	120 22	Do.
Loma Prieta (Mountain Bache)	Santa Clara	1,156	3,793	37 7	121 51	U.S.C. and G.S.
Lone Star Hill	Inyo	1,497	4,911	36 13	117 26	Wheeler.
Lookout Hill	do	1,284	4,214	36 14	117 26	Do.
Lookout Peak	Alpine	2,926	9,600	38 31	119 52	U.S.G.S.
Lovers' Leap	Eldorado	2,129	6,985	38 48	120 8	Do.
Lyell Mountain	Fresno	4,028	13,217	37	118 30	Whitney.
Maggies Peaks	Eldorado	2,659	8,725	38 56	120 7	U.S.G.S.
Magee Peak	Shasta	2,284	7,494	40 45	121 33	Do.
Malurango Peak	Inyo	2,696	8,844	30 6	117 30	Wheeler.
Markleeville Peak	Alpine	2,885	9,465	38 39	119 54	U.S.G.S.
McDonald Peak	Lassen	2,424	7,954	40 56	120 25	Wheeler.
McGill Peak	Ventura	2,808	9,214	34 48	119 8	Do.
McKesick Peak	Lassen	2,159	7,083	40 10	120 15	Do.
McKinstry Peak	Placer-Eldorado	2,413	7,918	39 2	120 21	U.S.G.S.
Mocho Mountain	Alameda	1,245	4,085	37 29	121 33	U.S.C. and G.S.
Mokelumne Peak	Amador	2,856	9,371	38 32	120 6	U.S.G.S.
Mono Pass	Mono	3,281	10,765	37 51	119 11	Whitney.
Moore Hill	Mariposa	1,398	4,588	37 26	120 1	Wheeler.
Needle Peak	Inyo	2,160	7,086	35 55	117 7	Do.

TABLE OF ELEVATIONS EXCEEDING 1,000 METERS (3,281 FEET) IN CALIFORNIA—Continued.

Place.	County.	Elevation.		Latitude.	Longitude.	Authority.
		Meters.	Feet.			
				° ′	° ′	
Nichols Point	Kern	1,900	6,233	35 37	118 18	Wheeler.
Nipple	Alpine	2,862	9,390	38 39	119 56	U. S. G. S.
Noble Pass	Shasta	1,818	5,963	40 34	121 36	Wheeler.
North Dome	Mariposa	2,294	7,525	37 45	119 34	Do.
North Peak (Diablo)	Santa Clara	1,095	3,593	37 24	121 53	Whitney.
Observation Peak	Lassen	2,441	8,009	40 46	120 10	Wheeler.
Olcott Peak	San Bernardino	2,248	7,374	35 59	115 24	Do.
Old Baldy, or San Antonio Peak	Los Angeles	3,085	10,120	34 16	117 39	Do.
Old Man Mountain	Sierra	2,377	7,800	39 22	120 31	U. S. G. S.
Omjumnin Peak	Plumas	2,528	8,293	39 56	120 16	Wheeler.
Ophir Mountain	Inyo	1,848	6,063	36 17	117 36	Do.
Oso Mountain	Stanislaus	1,031	3,383	37 30	121 21	Whitney.
Ostrander's Rocks	Mariposa	2,482 2,486	8,142 8,157	37 41	119 36	Wheeler.
Pah-ute Peak	Inyo	2,543	8,344	35 29	119 22	Do.
Paxton	Mendocino	1,041	3,414	39 8	123 19	U. S. C. and G. S.
Penmen Peak	Plumas	2,219	7,280	39 49	120 36	U. S. G. S.
Pierce Mountain	Humboldt	999	3,278	40 25	124 8	U. S. C. and G. S.
Pike Co. Peak	Yuba	1,120	3,675	39 28	121 12	U. S. G. S.
Pilot Hill	Plumas	1,889	6,198	39 45	120 30	Do.
Pilot Knob	San Bernardino	1,684	5,525	35 23	117 14	Wheeler.
Pilot Peak	Plumas-Sierra	2,289	7,509	39 47	120 52	U. S. G. S.
Do	Mariposa	1,836	6,024	37 45	119 56	Wheeler.
Pinto Peak	Inyo	2,215	7,265	36 26	117 20	Do.
Preston Peak	Del Norte	2,142	7,028	41 45	123 33	U. S. C. and G. S.
Profile Cliff	Mariposa	2,262	7,425	37 43	119 36	Wheeler.
Promontory Point	Tehama	1,105	3,627	39 59	121 44	U. S. G. S.
Pyramid Peak	Eldorado	3,054	10,020	38 50	120 10	Do.
Do	Inyo	2,059	6,754	36 23	116 37	Wheeler.
Rainbow Mountain	Humboldt	1,046	3,432	40 25	124 10	U. S. C. and G. S.
Rattlesnake Butte	Modoc	1,516	4,973	41 27	120 45	U. S. G. S.
Raymond Peak	Alpine	3,072	10,075	38 35	119 50	Do.
Red Lake Peak	Eldorado	3,033	9,950	38 43	119 59	Do.
Red Mountain (Signal Peak)	Placer	2,396	7,860	39 15	120 32	U. S. C. and G. S.
Red Peak	Eldorado	2,119	6,952	39	120 21	U. S. G. S.
Relief Peak	Tuolumne	3,300	10,826	38 14	119 44	Wheeler.
Rhett (or Tule) Lake	Siskiyou	1,263	4,143	41 55	121 30	U. S. G. S.
Richardson's Peak	Eldorado	3,021	9,910	38 58	120 9	Do.
Richardson	Tuolumne	2,985	9,794	38 5	119 41	Wheeler.
Rickey's Peak	Mono	3,043	9,988	38 15	119 23	Do.
Robb's Peak	Eldorado	2,050	6,725	38 56	120 24	U. S. G. S.
Rocky Butte	San Luis Obispo	1,055	3,462	35 40	121 4	U. S. C. and G. S.
Round Mountain	Shasta	1,048	3,439	40 46	121 58	U. S. G. S.
Round Top or Alpine Peak	Amador	3,179	10,430	38 39	120	Do.
Rubicon Peak	Eldorado	2,802	9,198	38 59	120 8	Do.
Saddle Back Mountain	Sierra	2,060	6,760	39 38	120 51	Do.
Saddle Mountain	Eldorado	1,599	5,245	38 51	120 35	Do.
St. Helena Mountain	Sonoma-Lake	1,822	4,337	38 40	122 38	U. S. C. and G. S.
San Antonio Peak	Los Angeles	3,085	10,120	34 17	117 39	Wheeler.
San Bernardino Peak	San Bernardino	3,078	10,100	34 11	117 56	Do.
San Carlos Peak	San Benito	1,517	4,977	36 26	120 39	Whitney.
San Fernando Peak	Los Angeles	1,156	3,793	34 20	118 36	Wheeler.
San Gabriel Peak	do	1,900	6,232	34 15	118 6	Do.
San Jose Mountain	San Luis Obispo	1,151	3,777	35 19	120 16	U. S. C. and G. S.
Santa Alla	San Benito	1,101	3,613	36 54	121 14	Do.
Santa Lucia	Monterey	1,788	5,867	36 9	121 25	Do.
Sand Mountain	Eldorado	1,464	4,802	38 52	120 40	U. S. G. S.
Sanhedrim	Mendocino	1,890	6,199	39 31	123 6	U. S. C. and G. S.
Sauel Mountain	do	1,026	3,365	38 57	123 13	Do.
Saw Mill Peak	Butte	1,021	3,351	39 49	121 33	U. S. G. S.

TABLE OF ELEVATIONS EXCEEDING 1,000 METERS (3,281 FEET) IN CALIFORNIA—Continued.

Place.	County.	Elevation.		Latitude.	Longitude.	Authority.
		Meters.	Feet.	° ′	° ′	
Scott Mountain or Callahan's Peak	Siskiyou-Trinity	2,377	7,800	41 10	122 40	U. S. G. S.
Scott Mountain or Cannon Creek Peak	Trinity	2,744	9,202	41 5	123 10	U. S. C. and G. S.
Sentinel Dome	Mariposa	2,476	8,122	37 43	119 35	Wheeler.
Sentinel Peak	Inyo	3,004	9,856	36 6	117 5	Do.
Shaffer Peak	Lassen	2,092	6,864	40 27	120 21	Do.
Shasta Mountain [a]	Siskiyou	4,368 4,402	14,350 14,444	41 25	122 12	U. S. G. S. Whitney.
Sheep Mountain [b]	Inyo	4,285	14,059	36 34	118 9	Le Conte.
Shinns Peak	Lassen	2,325	7,628	40 41	120 14	Wheeler.
Sierra Butte	Sierra	2,626	8,615	39 36	120 39	U. S. G. S.
Signal Peak (Red Mountain)	Nevada	2,396	7,860	39 20	120 31	Do.
Silliman Mountain	Tulare	3,543	11,623	36 50	118 20	Whitney.
Silver Knob	Mariposa-Madera	1,580	5,183	37 26	119 45	Wheeler.
Silver Peak	Alpine	3,333	10,935	38 38	119 45	U. S. G. S.
Slate Mountain	Eldorado	1,193	3,915	38 49	120 41	Do.
Slate Peaks	Mono	4,064	13,400	37 31	118 56	Whitney.
Slick Rock	Eldorado	2,220	7,285	38 58	120 17	U. S. G. S.
Snow Mountain	Placer	2,453	8,048	39 15	120 28	Do.
Snow Mountain, east	Glenn	2,134	7,000	39 23	122 45	U. S. C. and G. S.
Sonora Pass	Tuolumne	2,933	9,623	38 15	119 45	U. S. G. S.
Sonora Peak	Mono	3,499	11,479	38 21	119 38	Wheeler.
South Fork Peak	Lassen	2,257	7,406	41 9	120 33	U. S. G. S.
Spanish Bluff	Plumas	2,148	7,047	39 56	121 8	Do.
Spanish Peak	do	2,204	7,231	39 56	121 14	Do.
Spruce Grove Mountain	Humboldt	1,161	3,810	40 6	123 41	U. S. C. and G. S.
Squaw Peak	Placer	2,731	8,960	39 11	120 16	U. S. G. S.
Stanislaus Peak	Alpine	3,390	11,123	38 23	119 40	Wheeler.
Starr King Mountain	Mariposa	2,768	9,080	37 42	119 31	Do.
Stevens Peak	Eldorado	3,079	10,100	38 44	119 59	U. S. G. S.
Strawberry Peak	San Bernardino	1,883	6,014	34 14	117 15	Wheeler.
Sugar Loaf	Kern	1,110	3,643	35 37	118 46	Do.
Do	Placer	1,158	3,799	39 2	120 44	U. S. G. S.
Do	Siskiyou	1,905	6,250	41 21	122 20	Do.
Sulphur Peak	Sonoma	1,055	3,462	38 46	122 51	U. S. C. and G. S.
Summit Peak	Lassen	2,533	8,311	39 42	120 8	Wheeler.
Sunset Hill	Butte	1,009	3,309	39 31	121 18	U. S. G. S.
Sweetwater Peak	Mono	3,589	11,778	38 26	119 18	Wheeler.
Table Mountain	Butte	1,895	6,217	39 58	121 25	U. S. G. S.
Do	Sierra	1,717	5,619	39 31	120 51	Do.
Table Rock	Siskiyou	1,169	3,836	41 44	122 17	Do.
Table Rocks	Sierra	2,128	6,980	39 42	120 53	Do.
Tahoe Lake [c]	Placer-Eldorado	1,897	6,225	39 00	120 00	Do.
Tallac Mountain	Eldorado	2,982	9,785	38 54	120 6	Do.
Taylor Rock	Plumas	2,239	7,345	40 00	120 49	Do.
Tehachapi Peak	Kern	2,456	8,056	35 2	118 35	Wheeler.
Tejon Pass [d]	San Luis Obispo	1,611	5,285	35 00	119 30	Whitney.
Tejon Pass (old fort)	Kern	1,143	3,750	34 55	118 55	S. C. (Kerr).
Telescope Peak	Inyo	3,383	10,938	36 10	117 05	Wheeler.
Tells Peak	Eldorado	2,781	9,125	38 57	120 15	U. S. G. S.
Texas Hill	Mariposa	1,011	3,318	37 40	120 00	Do.
Thimble Peak	Eldorado	3,008	9,870	38 40	120 4	Do.
Thompson Peak	Plumas	2,363	7,752	40 15	120 38	Wheeler.
Thompson Peak [e]	Trinity	2,743	9,000	41 1	123 1	U. S. G. S.
Timber Mountain	Modoc	1,567	5,142	41 37	120 45	Do.
Timbered Mountain	do	1,678	5,505	41 45	120 45	Do.
Tinker Knob	Placer	2,749	9,020	39 15	120 18	Do.
Toms Head	Tehama	2,065	6,775	40 5	122 47	Do.
Toorup Mountain	Del Norte	1,239	4,065	41 30	123 56	U. S. C. and G. S.

[a] A series of barometer observations placed Mount Shasta 14,511 feet (4,423 meters), but results above are more reliable.
[b] Sheep Mountain, also called Whitney No. 1 and Mount Corcoran.
[c] Portion of Lake Tahoe is in Nevada.
[d] A high ridge in Kern County near Tehachapi Peak is erroneously called Tejon Pass.
[e] Sometimes called Stewarts Fork Peak.

TABLE OF ELEVATIONS EXCEEDING 1,000 METERS (3,281 FEET) IN CALIFORNIA—Continued.

Place.	County.	Elevation.		Latitude.	Longitude.	Authority.
		Meters.	Feet.			
				° ′	° ′	
Toro Mountain	Monterey	1,083	3,554	36 31	121 37	U.S.C. and G.S.
Tower Peak	Tuolumne-Mono	3,546	11,634	38 9	119 31	Wheeler.
Tower Rock	Plumas	2,376	7,794	40 00	120 47	U.S.G.S.
Tuolumne Peak	Tuolumne-Mariposa	2,056	6,747	37 52	119 29	Wheeler.
Turret Peak	Modoc	1,920	6,299	41 23	121 7	U.S.G.S.
Twin Peaks	Placer	2,720	8,924	39 7	120 14	Do.
Do	Monterey	1,530	5,020	36 8	121 29	U.S.C. and G.S.
		1,433	4,700			
Tyndall Mountain	Tulare	4,279	14,038	36 39	118 10	LeConte.
Umanhum Mountain	Santa Clara	1,046	3,430	37 10	121 53	Do.
Union Point	Mariposa	1,917	6,290	37 44	119 35	Wheeler.
Wamelo Rock	Madera	2,268	7,440	37 27	119 31	Do.
Wards Peak	Placer	2,641	8,665	39 9	120 15	U.S.G.S.
Warren Peak	Modoc	2,947	9,668	41 22	120 13	Wheeler.
Washington Tower	Mariposa	1,785	5,856	37 44	119 34	Do.
Watkins Mountain	do	2,499	8,200	37 46	119 31	Do.
Webber Peak	Sierra	2,470	8,102	39 28	120 26	U.S.G.S.
Wellington Peak	Plumas	2,336	7,665	39 51	120 31	Wheeler.
Whitney Mountain[a]	Inyo	4,426	14,522	36 35	118 20	Langley.
	Tulare	4,410	14,470	36 35	118 20	Wheeler.
White Granite Peak	Ventura	2,155	7,069	34 36	119 8	Do.
White Mountains:						
Mount McBride	Mono	4,090	13,415	37 38	118 15	U.S.C. and G.S.
South Peak	do	4,350	14,245	37 38	118 15	Do.
Wilson[b]	Los Angeles	1,814	5,950	34 13	118 5	Do.

[a] This is the peak formerly known as Fisherman's.

[b] Approximate elevation.—Prof. E. C. Pickering.

SUPPLEMENTARY TABLE OF ELEVATIONS DETERMINED BY JOSEPH N. LE CONTE, JULY AND AUGUST, 1903.

Place.	Feet.	Place.	Feet.	Place.	Feet.
Williamson	14,396	Split	14,076	Middle Palisade	14,000
Sill	14,128	Keith	14,015	Jordan	14,212
Humphreys	13,985	Tyndall	14,038	Darwin	13,784
Junction	13,916	Goddard	13,532	Stanford	13,988
Crag Ericson	13,629	Goat Mountain	12,206	North Guard	13,352
Brewer	13,573	Peak south of Brewer	13,576	Table	13,625
High peak south of table	13,679	Milestone	13,655	No. 1 Kaweah	13,777
No. 2 Kaweah	13,825	No. 3 Kaweah	13,872	Mount Kaweah	13,822
Red Spur	12,786	Saw Tooth	12,345	Guyot	12,331
Peak head of Rock Creek	13,416	Cirque Peak	12,942	Olancha	12,133
Sheep Mountain	14,059	Le Conte	13,963	Lone Pine Peak	12,925
White Mountain Peak	14,273	Railroad Station	8,727	Pinchot	13,485
University	13,608	Arrow Peak	12,948	King	12,875
Gardner	12,928	Barnard	13,525	East Vidette	12,684
Bradley	13,334	Rixford	12,906	Gould	13,090
High peak on Wood's Creek	13,127	Pyramid Peak	13,767	Striped	13,178
Ruskin	12,775	Table Palisades	13,504	Peak Marion	12,704
Dougherty Peak	12,602	Agassiz Needle	13,747	Dusy Peak	13,875
Flat peak on head Middle Fork	13,520	Devil's Crag	12,595	Woodworth	12,240
Charybdis	13,088	Scylla	12,948	Blue Canyon Peak	12,425
Kettle Rock	9,587	Peak at junction of Kings	9,439	Mount Sillman Cliff	11,229
South Dome Peak	11,676	Avalanche Peak	11,285	Cross Mountain	12,955
Geneva	13,049	Harrison Pass	12,720	Sphinx (head of)	9,103
Sphinx (top of)	9,180	Palmer	10,128	Tehipitee Dome	7,760

CLIMATE OF NORTH AND CENTRAL COAST.

CLIMATOLOGY OF EUREKA, AND WEATHER CONDITIONS ALONG THE COAST OF NORTHERN CALIFORNIA.

By Mr. A. H. BELL, Observer, Weather Bureau.

The city of Eureka stands on the south shore of Humboldt Bay about 7 miles from the entrance and some 215 miles from San Francisco, latitude north 40° 48′ and longitude west 124° 11′. A few miles east of the city we have the forest-covered foothills of the coast range, while on the west the shore is washed by the Pacific Ocean.

Equable and apparently health-giving is Eureka's climate. Since establishment of the station the highest recorded temperature is 84° and the lowest 20° above. Fogs and overcast skies prevail at all seasons along the coast. They preserve a uniform temperature and a humid atmosphere, and, to a large extent, determine the character of our industries and productions. In summer, however, cloudless skies and a high temperature are characteristics of the higher latitudes and of the region east of the redwood belt. From October until April is the rainy season, but the wet period is by no means a season of continuous precipitation. Sometimes a rainy season will embrace much pleasant weather. While the prevailing winds are in summer northerly, seldom indeed do they attain the velocity of a gale, usually rising before noon and subsiding before nightfall. These winds are extremely liable to ensue on two or three consecutive days. In winter, on the other hand, the prevailing winds are southeasterly.

Humboldt Bay has a varying width of from half a mile to 4 miles and a length of 14 miles, and possesses a tidal area of about 28 square miles. It lies nearly parallel with the coast, and between it and the ocean there intervenes a sand peninsula with a width of from one-fourth mile to 1½ miles. So narrow is the entrance and so peculiar are its relations to the body of water within—in other words so completely landlocked is our harbor—that tempestuous weather outside affects it very little.

MEAN MONTHLY AND ANNUAL TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1887	46.6	41.0	49.3	48.5	51.9	52.4	52.5	54.7	54.0	53.0	50.5	47.7	50.2
1888	44.6	48.4	47.7	50.9	53.5	59.4	58.0	57.4	57.4	54.6	51.2	52.2	52.9
1889	46.9	48.2	52.2	53.2	54.8	55.0	55.6	55.4	56.0	56.2	53.2	46.6	52.8
1890	42.2	44.4	46.9	49.0	54.0	55.2	56.7	55.8	53.2	51.6	50.0	48.4	50.6
1891	48.0	45.4	49.0	50.9	53.2	56.4	56.0	59.4	56.7	54.1	52.4	45.4	52.2
1892	48.0	47.8	48.6	49.0	52.8	53.6	55.4	56.2	56.2	53.6	49.6	46.6	51.4
1893	44.7	45.2	47.8	47.8	51.4	53.7	55.9	55.2	56.0	51.4	50.9	47.4	50.6
1894	45.6	43.6	46.4	48.6	51.0	54.4	54.4	57.3	56.0	53.9	50.7	46.0	50.7
1895	46.4	49.4	47.9	49.8	53.0	52.8	56.0	54.0	53.7	52.0	48.8	46.8	50.9
1896	50.0	48.4	50.0	48.3	51.5	54.0	57.2	59.9	55.6	52.6	49.1	51.0	52.3
1897	48.1	47.2	45.2	51.0	52.8	55.8	55.8	56.5	55.2	53.8	49.4	48.6	51.6
1898	44.0	50.0	45.6	48.8	50.4	56.3	54.6	55.9	56.0	53.9	48.3	46.2	50.8
1899	47.5	44.4	48.0	48.2	49.6	52.0	54.8	55.9	54.8	52.0	55.9	48.0	50.9
1900	50.4	48.6	50.5	50.5	54.4	56.2	56.4	57.0	56.6	53.8	53.3	50.8	53.2
Mean	46.6	46.6	48.2	49.6	52.4	54.8	55.7	56.5	55.5	53.3	51.0	48.0	51.5

Summary of Monthly Means and Extremes of Temperature.

Month.	Highest monthly mean.		Lowest monthly mean.		Absolute maximum.		Absolute minimum.		Greatest daily range.	Mean daily range.	Mean variability.
	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.			
January	1900	50.4	1890	42.2	26, 1888	77.0	14, 1888	20.0	25.0	12.2	3.1
February	1898	50.0	1887	41.0	2, 1898	70.0	4, 1899	24.0	29.0	12.7	2.5
March	1889	52.2	1897	45.2	26, 1895	75.0	3, 1896	29.0	24.0	12.0	2.4
April	1889	58.2	1893	47.8	26, 1891	73.0	5, 1895	31.0	25.0	11.3	2.4
May	1889	54.8	1899	49.6	24, 1890	78.0	1, 1887	35.0	26.0	10.0	1.9
June	1888	59.4	1899	52.0	17, 1898	75.0	26, 1887	40.0	18.0	10.0	1.6
July	1888	58.0	1887	52.5	16, 1888	73.0	15, 1887	43.0	14.0	9.0	1.3
August	1896	59.9	1895	54.0	27, 1894	79.0	31, 1890	45.0	18.0	9.0	1.6
September	1888	57.4	1890	53.2	17, 1897	82.0	22, 1895	36.0	22.0	11.2	2.2
October	1889	56.2	1893	51.4	5, 1897	84.0	17, 1893	33.0	34.0	12.2	2.5
November	1889	53.2	1898	48.3	16, 1895	74.0	27, 1896	27.0	26.0	12.6	2.9
December	1888	52.2	1891	45.4	15, 1891	70.0	22, 1895	30.0	24.0	12.6	2.8
Annual	1896	59.9	1887	41.0	[a] 1897	84.0	[b] 1888	20.0	34.0	11.2	2.8

[a] October 5. [b] January 14.

Weather.

Month.	Average number of days.				Month.	Average number of days.			
	Clear.	Partly cloudy.	Cloudy.	Rainy.		Clear.	Partly cloudy.	Cloudy.	Rainy.
January	6	10	15	17	August	7	13	11	2
February	6	10	13	15	September	9	12	9	5
March	6	11	14	16	October	9	11	11	10
April	6	11	12	13	November	8	10	12	13
May	7	12	12	11	December	7	9	15	16
June	8	13	8	7	Annual	88	135	142	126
July	9	13	10	1					

Monthly, Annual, and Seasonal Precipitation (Inches and Hundredths).

[The capital letter "T" indicates the rainfall was but a trace and was too small to measure. The total rainfall for the seasons are the totals from July 1 of one year to June 30 of the next year.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Season of—	Seasonal.	Annual.
1887	8.86	9.07	2.28	5.55	3.51	1.92	0.06	0.07	0.21	0.55	2.66	5.43	.....	.....	40.17
1888	12.95	1.98	4.09	1.05	0.76	4.66	0.44	T.	0.06	1.15	3.41	5.93	1887-88	34.78	36.48
1889	4.25	1.93	5.91	3.49	7.20	0.37	0.15	0.13	0.82	3.36	3.71	12.88	1888-89	33.98	48.70
1890	18.26	13.88	11.57	2.26	1.71	0.87	0.08	0.02	0.79	0.44	0.18	5.48	1889-90	73.92	55.54
1891	3.33	9.81	5.83	6.37	1.55	1.53	0.29	0.31	1.45	1.64	2.72	10.97	1890-91	35.91	45.80
1892	3.29	2.53	5.32	5.54	3.63	0.45	0.00	0.09	0.99	2.90	8.19	6.55	1891-92	37.63	39.48
1893	3.65	6.27	10.59	7.16	2.43	0.33	0.00	0.00	2.39	4.33	9.87	6.69	1892-93	49.06	53.71
1894	12.38	6.13	7.46	2.97	1.31	1.67	0.02	0.04	1.84	3.12	2.03	12.31	1893-94	55.26	51.28
1895	9.37	3.60	5.31	2.88	5.39	0.06	0.23	0.11	3.14	0.05	3.88	7.50	1894-95	46.25	41.52
1896	8.14	4.61	6.93	11.13	6.22	0.51	0.00	0.70	1.60	2.37	8.00	9.41	1895-96	52.81	59.62
1897	3.04	11.23	9.85	2.55	0.75	1.60	0.03	0.15	1.05	2.63	5.44	6.18	1896-97	50.58	44.50
1898	3.23	8.00	1.80	2.78	2.62	1.21	T.	0.06	1.48	2.13	4.43	3.17	1897-98	35.00	30.91
1899	6.50	5.03	8.53	1.91	1.73	0.75	0.00	0.42	0.88	4.28	14.80	7.05	1898-99	36.08	51.88
1900	6.63	6.04	3.42	4.43	2.08	1.70	T.	0.07	0.21	7.07	8.06	5.27	1899-1900	51.33	44.98
Average for 14 years	7.42	6.44	6.35	4.29	2.92	1.26	0.09	0.16	1.17	2.92	5.53	7.49	.....	45.59	46.04

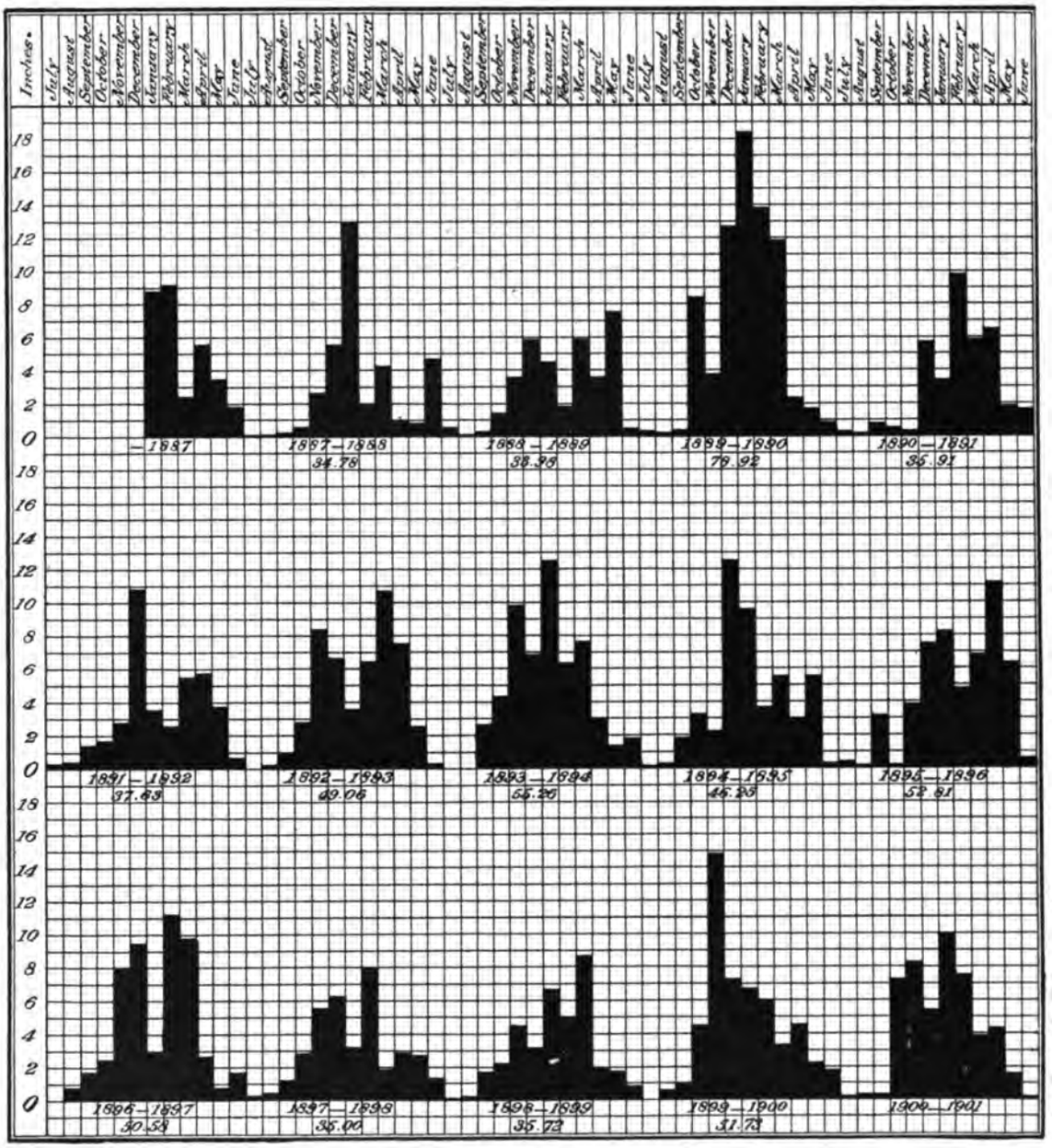

FIG. 4.—Seasonal rainfall at Eureka, Cal., from 1887 to 1901.

DATES OF FIRST AND LAST LIGHT AND KILLING FROSTS, WITH LOWEST TEMPERATURE.

[Record began January 1, 1887.]

Year.	First light frost of season.		First killing frost of season.		Last light frost of season.		Last killing frost of season.	
	Date.	Minimum temperature.	Date.	Minimum temperature.	Date.	Minimum temperature.	Date.	Minimum temperature.
		° F.		° F.		° F.		° F.
1887–88					May 11, 1888	44	Mar. 27, 1888	38
1888–89	Nov. 4, 1888	38	Nov. 27, 1888	35	Mar. 21, 1889	39	Feb. 19, 1889	34
1889–90	Sept. 13, 1889	40	Dec. 11, 1889	34	Apr. 14, 1890	35	Mar. 11, 1890	31
1890–91	Oct. 3, 1890	40	Nov. 7, 1890	35	Apr. 11, 1891	40	Mar. 29, 1891	34
1891–92	Sept. 30, 1891	43	Dec. 5, 1891	34	Apr. 26, 1892	38	Apr. 4, 1892	36
1892–93	Oct. 17, 1892	40	Nov. 17, 1892	37	Apr. 18, 1893	36	Apr. 8, 1893	33
1893–94	Oct. 17, 1893	38	Nov. 17, 1893	35	May 16, 1894	36	Mar. 22, 1894	36
1894–95	Nov. 13, 1894	46	Dec. 10, 1894	36	Apr. 18, 1895	38	Apr. 5, 1895	31
1895–96	Aug. 8, 1895	46	Nov. 23, 1895	32	May 12, 1896	38	Mar. 31, 1896	31
1896–97	Sept. 13, 1896	43	Nov. 27, 1896	27	Apr. 7, 1897	36	Mar. 30, 1897	32
1897–98	Oct. 15, 1897	39	Dec. 19, 1897	32	May 7, 1898	39	Mar. 22, 1898	30
1898–99	Oct. 24, 1898	41	Nov. 25, 1898	34	June 6, 1899	40	Feb. 7, 1899	33
1899–1900	Oct. 14, 1899	39	Dec. 13, 1899	35	May 27, 1900	43	None	
1900–1901	Oct. 6, 1900	43	None		June 12, 1901	42	April 7, 1901	34

In the table below will be found the greatest monthly precipitation and date; least monthly precipitation and date; number of times monthly precipitation has exceeded the normal in fourteen years:

Month.	Greatest monthly precipitation.		Least monthly precipitation.		Number of times precipitation has exceeded normal in 14 years.			Month.	Greatest monthly precipitation.		Least monthly precipitation.		Number of times precipitation has exceeded normal in 14 years.		
	Amount.	Date.	Amount.	Date.	In first 7 years.	In second 7 years.	Total.		Amount.	Date.	Amount.	Date.	In first 7 years.	In second 7 years.	Total.
	In.		*In.*		*In.*	*In.*	*In.*		*In.*		*In.*		*In.*	*In.*	*In.*
January	18.26	1890	3.04	1897	3	3	6								
February	13.88	1890	1.93	1889	4	2	6	July	0.44	1888	0.00	1892, 1893, 1896	3	1	4
March	11.57	1890	1.80	1898	2	4	6								
April	11.13	1896	1.05	1888	4	2	6	August	0.70	1896	0.00	1893	2	4	6
May	7.20	1889	0.75	1897	3	2	5	September	3.14	1895	0.00	1888	2	4	6
June	4.66	1888	0.06	1895	3	2	5	October	8.36	1889	0.05	1895	3	4	7
								November	9.87	1893	0.18	1890	2	5	7
								December	12.88	1889	3.17	1898	2	2	4

AVERAGE HOURLY WIND VELOCITY [IN MILES PER HOUR].

[Record began January 1, 1888.]

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1888	6.8	6.0	9.4	5.9	6.7	6.3	7.3	4.6	4.8	4.3	3.9	5.1
1889	5.1	4.8	6.3	7.5	7.9	6.4	5.3	5.1	5.2	4.6	4.1	5.7
1890	7.7	7.5	6.3	8.3	7.8	8.6	6.9	5.3	3.9	5.1	4.0	4.5
1891	5.0	7.0	7.8	8.6	8.2	8.0	6.0	4.9	4.6	4.2	4.5	7.0
1892	5.2	4.1	6.5	7.5	7.6	8.4	7.5	5.0	4.0	4.3	5.4	5.7
1893	4.5	7.6	6.7	8.0	9.1	8.5	6.0	4.9	6.3	4.9	6.2	4.0
1894	7.0	6.5	7.4	8.2	7.5	7.8	5.5	5.1	6.6	5.0	4.0	7.0
1895	7.4	5.0	7.3	7.1	9.1	8.2	6.4	4.9	4.2	4.2	5.2	5.5
1896	7.3	6.1	8.3	8.3	9.8	8.3	5.4	5.8	4.4	4.6	6.4	5.6
1897	4.7	5.9	8.4	7.1	7.3	6.7	8.2	4.8	5.2	5.1	4.7	5.7
1898	5.4	6.7	7.2	8.9	7.2	8.7	6.4	5.0	4.8	4.5	4.7	3.9
1899	5.8	6.6	6.8	7.8	8.6	8.6	6.3	5.4	4.0	5.4	6.4	5.0
1900	4.1	5.7	6.0	9.6	7.6	7.3	6.3	5.8	6.3	6.0	4.0	6.4
Average	5.8	6.1	7.3	7.9	8.0	7.8	6.4	5.1	4.9	4.8	4.9	5.5

Highest Wind Velocity, Direction, and Date for each Month from January 1, 1888.

Months.	Velocity.	Direction.	Day and year.	Months.	Velocity.	Direction.	Day and year.	Months.	Velocity.	Direction.	Day and year.
	Miles.				*Miles.*				*Miles.*		
January	44	S.	1, 1894	May	46	NW.	14, 1896	September	44	NW.	21, 1900
February	48	NW.	29, 1896	June	47	N.	22, 1892	October	38	N.	[a] 18, 1888
March	46	NW.	2, 1894	July	44	NW.	17, 1897	November	40	S.	27, 1892
April	42	N.	11, 1890	August	36	NW.	27, 1892	December	50	SW.	24, 1892

[a] Also on October 3, 1896.

Average Humidity (Per cent).

[Record began January 1, 1887.]

Month.	A.M.	P.M.	Average.	Month.	A.M.	P.M.	Average.	Month.	A.M.	P.M.	Average.
January	91	83	87	May	92	80	86	September	94	83	88
February	91	80	86	June	93	80	86	October	93	85	89
March	90	79	84	July	94	82	88	November	92	84	88
April	91	80	86	August	95	85	90	December	89	82	86

Number of Foggy Days and Thunder Storms in Fourteen Years.

[Record began January 1, 1887.]

Month.	Number of—		Month.	Number of—		Month	Number of—	
	Foggy days.	Thunder storms.		Foggy days.	Thunder storms.		Foggy days.	Thunder storms.
January	52	2	May	22	4	September	25	1
February	22	1	June	25	1	October	118	1
March	32	2	July	109	0	November	56	3
April	12	0	August	96	3	December	25	9

Total Number of Days with Precipitation since January 1, 1887.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Less than 0.01	10	17	10	11	11	7	3	3	7	13	7	13
0.01 to 0.10	65	65	65	62	68	47	11	25	34	57	56	67
0.11 to 0.25	40	53	42	52	34	25	3	3	13	30	29	51
0.26 to 0.50	63	49	58	35	21	13	1	1	11	25	47	43
0.51 to 1.00	45	29	42	21	16	4	0	0	5	15	31	39
Over 1.00 inch	23	24	19	14	10	3	0	0	3	9	15	30

Greatest Precipitation in Twenty-four hours for each Month.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Greatest annual.
1887	2.19	2.88	0.88	1.64	1.05	1.55	0.02	0.03	0.20	0.34	0.91	0.88	2.88
1888	3.91	0.80	0.97	0.30	0.30	1.99	0.44	T.	0.04	0.42	1.18	1.71	3.91
1889	1.58	0.65	1.71	1.02	1.54	0.86	0.04	0.09	0.13	3.06	0.79	2.43	3.06
1890	3.72	4.91	2.90	1.37	0.83	0.35	0.06	0.01	0.68	0.41	0.08	2.21	4.91
1891	0.94	1.96	1.24	2.09	0.76	0.48	0.14	0.24	0.73	0.52	0.99	2.22	2.22
1892	1.18	0.72	1.27	1.10	1.40	0.14	0.00	0.05	0.63	1.27	2.33	2.73	2.73
1893	0.98	1.57	2.06	1.18	0.68	0.22	0.00	0.00	0.81	2.12	3.70	2.46	3.70
1894	3.72	1.05	1.60	1.27	0.52	0.51	0.02	0.04	1.51	1.07	1.19	3.47	3.72
1895	2.20	1.77	1.86	0.58	2.24	0.04	0.12	0.07	2.77	0.03	1.32	1.88	2.77
1896	1.34	1.31	1.86	2.87	1.36	0.27	0.00	0.60	1.46	0.94	3.04	2.69	3.04
1897	1.16	2.48	1.56	0.99	0.25	0.62	0.02	0.08	0.75	1.09	1.54	1.88	2.48
1898	0.68	2.14	0.62	1.85	0.86	0.60	T.	0.06	0.80	0.62	1.02	0.80	2.14
1899	1.16	3.17	1.60	0.55	1.23	0.36	0.00	0.24	0.74	1.90	3.38	1.37	3.38
1900	2.16	2.02	1.10	1.91	1.40	1.26	T.	0.07	0.10	2.05	2.67	1.52	2.67
Greatest	3.91	4.91	2.90	2.87	2.24	1.99	0.44	0.60	2.77	3.06	3.70	3.47	.....
Date	30	3	4	12-13	25-26	13-14	11-12	30-31	11-12	7-8	26-27	20-21	.....
Year	1888	1890	1890	1896	1895	1888	1888	1896	1895	1889	1893	1894	.....

Annual Meteorological Summary for the Years 1899 and 1900.[a]

[λ = 40° 48′ N.; φ = 124° 11′ W.; gravity corr., − 0.01.]

Date.	Pressure.			Temperature.							Moisture.										
		Extremes.		Mean.					Extremes.		Dew-point.		Relative humidity.		Vapor pressure.		Precipitation.		Cloudiness.		
	Monthly mean.	Maximum.	Minimum.	8 a. m.	8 p. m.	Maximum.	Minimum.	Monthly.	Maximum.	Minimum.	8 a. m.	8 p. m.	8 a. m.	8 p. m.	8 a. m.	8 p. m.	Total.	Maximum in 24 hours.	8 a. m.	8 p. m.	Daylight.
1899.	*In.*	*In.*	*In.*	°	°	°	°	°	°	°	°	°	%	%	*In.*	*In.*	*In.*	*In.*			
January..	30.06	30.44	29.25	44.8	51.0	58.0	42.0	47.5	61	34	41	45	87	80	0.259	0.299	6.50	1.16	4.9	6.0	6.9
February	30.19	30.47	26.68	42.1	46.8	48.9	40.0	44.4	55	24	39	41	88	82	0.241	0.268	5.03	3.17	5.0	5.9	6.2
March	29.98	30.42	29.47	44.8	50.9	58.4	42.5	48.0	64	35	42	43	90	76	0.269	0.281	8.53	1.60	6.8	6.0	6.1
April.....	30.06	30.29	29.64	44.6	51.5	53.3	48.2	48.2	58	38	41	44	88	75	0.261	0.285	1.91	0.55	4.9	4.9	5.0
May	30.07	30.27	29.59	46.7	51.6	53.4	45.7	49.6	59	37	43	44	88	76	0.282	0.290	1.73	1.23	7.2	5.5	5.8
June	30.08	30.22	29.82	48.5	55.1	56.2	47.8	52.0	61	40	46	48	92	76	0.314	0.330	0.75	0.36	5.4	2.1	3.0
July.....	29.99	30.13	29.84	51.8	57.0	58.6	51.1	54.8	62	46	50	51	92	80	0.354	0.375	0.00	0.00	8.5	5.3	6.8
August.....	29.96	30.13	29.83	53.0	58.5	59.8	52.0	55.9	67	48	51	52	92	80	0.369	0.392	0.42	0.24	7.6	4.5	5.8
September	30.01	30.15	29.80	51.7	57.2	59.2	50.5	54.8	74	46	50	52	94	83	0.360	0.386	0.88	0.74	3.3	4.9	6.7
October.....	29.99	30.29	29.55	48.7	55.5	57.9	46.1	52.0	76	39	45	48	88	78	0.301	0.336	4.28	1.90	3.3	5.0	5.5
November	29.92	30.28	29.53	53.9	58.4	61.3	50.5	55.9	69	41	48	51	83	78	0.345	0.377	14.80	3.38	5.7	7.2	7.3
December.....	30.08	30.53	29.55	44.4	51.7	54.1	41.8	48.0	61	33	42	46	91	82	0.269	0.313	7.05	1.37	4.7	5.5	6.2
Year	30.03	30.53	29.25	47.9	53.8	55.8	46.1	50.9	76	24	45	47	89	79	0.302	0.328	51.88	3.38	5.6	5.2	5.9
1900.																					
January.....	30.07	30.42	29.63	47.6	53.6	55.6	45.3	50.4	66	35	45	48	91	82	0.302	0.337	6.63	2.16	4.9	5.3	6.5
February	30.13	30.41	29.88	46.0	51.7	53.5	43.8	48.6	63	36	43	46	90	81	0.280	0.310	6.04	2.02	6.7	5.7	6.3
March	29.99	30.22	29.68	47.6	52.8	55.2	45.8	50.5	64	37	45	47	91	81	0.300	0.323	3.42	1.10	5.7	8.0	7.0
April.....	29.97	30.19	29.72	46.7	53.7	56.0	45.0	50.5	68	36	43	45	87	74	0.280	0.305	4.43	1.91	5.8	4.6	4.8
May.....	30.01	30.23	29.72	50.9	57.2	59.0	49.7	54.4	66	43	46	50	86	76	0.318	0.357	2.08	1.40	6.6	6.1	5.4
June	29.95	30.12	29.78	53.0	58.5	60.0	52.5	56.2	70	48	51	52	93	80	0.373	0.394	1.70	1.26	7.2	5.5	6.1
July.....	29.92	30.10	29.74	53.6	59.2	60.5	52.4	56.4	66	48	51	52	91	77	0.374	0.386	T.	T.	7.7	3.3	4.6
August.....	29.96	30.18	29.79	53.8	59.8	61.1	52.8	57.0	66	47	52	53	92	78	0.382	0.401	0.07	0.07	5.0	2.8	4.7
September	29.94	30.15	29.75	52.7	59.8	61.6	51.7	56.6	69	45	50	53	91	78	0.363	0.399	0.21	0.10	5.5	3.1	4.3
October.....	29.95	30.28	29.49	50.3	56.7	59.1	48.4	53.8	67	39	48	53	93	86	0.341	0.398	7.07	2.05	4.8	5.4	5.7
November	29.96	30.34	29.42	50.1	55.8	58.6	48.0	53.3	72	36	48	52	93	88	0.339	0.393	8.06	2.67	3.7	7.2	6.5
December... .	30.09	30.32	29.53	49.0	54.2	56.2	45.5	50.8	65	34	45	48	86	79	0.302	0.332	5.27	1.52	5.5	4.5	5.3
Year	30.00	30.42	29.42	50.1	56.1	58.0	48.4	53.2	72	34	47	50	90	80	0.330	0.361	44.98	2.67	5.8	5.1	5.6

[a] From observations at 8 a. m. and 8 p. m. 75th meridian time. Local mean time 8 h. 17 m. slow.

ANNUAL METEOROLOGICAL SUMMARY FOR THE YEARS 1899 AND 1900.

[H = 62 ft.; h_t = 60 ft.; h_r = 52 ft.; h_a = 69 ft.]

Date.	Wind.														Number of days.												
	By self-registers.					Number of winds, 8 a. m. and 8 p. m.												Precipitation.					Maximum temp.			Electricity.	
	Average hourly velocity.	Prevailing direction.	Maximum velocity.	Direction at time of maximum velocity.	Number of days with gales.	North.	Northeast.	East.	Southeast.	South.	Southwest.	West.	Northwest.	Calm.	Clear.	Partly cloudy.	Cloudy.	0.01 inch and ovre.	0.04 inch and over.	Snow.	Hail.	Fog.	Below 32°.	Above 90°.	Minimum temperature below 32°.	Thunderstorms.	Auroras.
1899.	*Miles.*		*Mi.*																								
January	5.8	SE.	39	SE.	0	4	1	3	23	3	9	2	14	3	6	7	18	18	16	0	2	8	0	0	0	0	0
February	6.6	NW.	36	NW	0	5	4	0	11	2	5	1	26	2	5	12	11	16	11	3	2	2	0	0	2	0	0
March	6.8	SE.	35	NW	0	8	3	0	17	7	6	2	16	3	10	6	15	20	19	0	1	2	0	0	0	0	0
April	7.8	NW.	38	NW.	0	4	3	2	9	3	9	3	24	3	8	14	8	10	9	0	1	0	0	0	0	0	0
May	8.6	NW.	36	N.	0	14	4	2	5	1	10	3	21	2	5	16	10	9	5	0	0	0	0	0	0	0	0
June	8.6	NW.	38	NW.	0	7	0	0	3	2	12	3	29	4	16	11	3	3	3	0	0	0	0	0	0	0	0
July	6.3	NW.	30	NW.	0	4	1	0	1	4	11	5	33	3	10	5	16	0	0	0	0	0	0	0	0	0	0
August	5.4	NW.	36	NW.	0	4	0	0	4	3	16	2	31	2	7	13	11	5	4	0	0	1	0	0	0	0	0
September	4.0	NW.	29	NW.	0	10	3	0	7	0	11	5	20	4	5	9	16	3	3	0	0	18	0	0	0	0	0
October	5.4	SE.	34	NW.	0	9	3	5	13	4	8	5	12	3	10	7	14	12	10	0	0	5	0	0	0	0	0
November	6.4	SE.	39	SE.	0	1	1	1	31	7	15	1	0	3	2	12	16	20	19	0	0	1	0	0	0	2	0
December	5.0	SE.	39	SE.	0	6	6	5	23	2	9	3	4	4	7	10	14	14	14	0	1	6	0	0	0	1	0
Year	6.4	NW.	39	SE.	0	76	29	18	147	38	121	35	230	36	91	122	152	130	113	3	7	38	0	0	2	3	0
1900.																											
January	4.1	SE.	28	SE.	0	4	12	1	17	4	5	2	12	5	8	9	14	17	16	0	0	5	0	0	0	0	0
February	5.7	SE.	39	N.	0	8	4	1	16	3	8	1	10	5	6	10	12	12	11	0	0	1	0	0	0	0	0
March	6.0	NW.	32	NW.	0	7	1	1	17	4	7	2	19	4	4	10	17	11	10	0	1	2	0	0	0	0	0
April	9.6	NW.	40	N.	1	8	10	0	10	2	10	4	15	1	12	9	9	11	10	0	0	0	0	0	0	0	0
May	7.6	NW.	33	N.	0	14	3	0	6	3	6	6	19	5	7	15	9	11	8	0	0	0	0	0	0	0	0
June	7.3	NW.	36	NW.	0	7	4	0	3	2	9	4	26	5	8	9	13	5	4	0	0	0	0	0	0	1	0
July	6.3	NW.	28	NW.	0	2	5	0	4	1	12	5	28	5	9	18	4	0	0	0	0	0	0	0	0	0	0
August	5.8	NW.	33	NW.	0	3	0	0	5	2	10	7	30	5	12	14	5	1	1	0	0	2	0	0	0	0	0
September	6.3	NW.	44	NW.	1	9	0	1	8	5	8	6	23	0	13	12	5	4	3	0	0	2	0	0	0	1	0
October	6.0	NW.	33	NE.	0	5	3	4	15	5	9	4	16	1	6	12	13	14	12	0	0	4	0	0	0	0	0
November	4.0	SE.	26	SE.	0	6	3	1	14	4	14	6	7	5	5	11	14	12	12	0	1	7	0	0	0	0	0
December	6.4	SE.	36	SW.	0	7	5	1	17	1	10	7	6	8	10	12	9	9	8	0	0	4	0	0	0	1	0
Year	6.3	NW.	44	NW.	2	80	50	10	132	36	108	54	211	49	100	141	124	107	95	0	2	27	0	0	0	3	0

Sunshine during the Years 1898, 1899, and 1900.

[N. lat. 40° 48′.]

	Percentage of sunshine recorded during hours ending (local time)—																Total (hours).	Percentage of possible.
	5h a. m.	6h	7h	8h	9h	10h	11h	Noon.	1h	2h	3h	4h	5h	6h	7h	8h		
1898.																		
January	.....	.....	.....	33	37	46	52	49	59	57	61	55	46	41	.....	.....	149.4	50
February	.....	.....	15	19	33	43	40	41	41	41	39	31	19	9	.....	.....	99.0	33
March	.....	50	42	45	51	50	62	64	70	70	66	58	59	51	57	.....	213.7	58
April	0	25	30	32	43	50	56	59	55	58	47	47	47	41	37	.....	181.6	45
May	14	18	25	40	42	46	53	58	63	66	60	54	49	50	44	40	210.3	47
June	26	28	31	44	51	55	47	50	57	63	61	58	52	47	47	48	219.2	49
July	4	8	9	13	19	30	44	55	59	55	56	54	51	56	46	45	179.7	39
August	0	0	3	8	13	25	26	38	49	61	55	47	39	40	34	15	135.1	32
September	.....	11	13	19	24	34	42	37	52	47	45	51	49	42	50	.....	140.2	37
October	.....	0	30	40	41	49	59	68	70	67	65	56	55	49	.....	.....	188.9	55
November	.....	.....	35	30	36	41	42	42	46	46	51	51	54	.....	.....	.....	124.7	42
December	.....	.....	.....	37	38	46	44	58	61	58	58	52	44	.....	.....	.....	144.7	50
Sum	44	140	233	360	428	515	567	619	682	689	664	614	564	426	315	148	1,986.5	537
Percentage of possible	.....	.....	.....	30	36	43	47	52	57	57	55	51	47	.....	.....	.....	165.5	45
1899.																		
January	.....	.....	.....	28	26	35	42	45	45	42	45	39	37	71	.....	.....	116.8	39
February	.....	.....	9	15	30	43	52	52	44	50	46	43	41	40	.....	.....	123.2	41
March	.....	17	27	30	38	46	59	58	53	59	60	55	41	32	33	.....	173.0	47
April	0	30	34	41	48	69	72	68	64	70	71	71	63	50	45	.....	230.9	58
May	18	18	28	36	41	45	58	61	56	65	68	62	56	44	36	34	212.9	47
June	23	27	39	43	52	61	73	78	89	88	87	87	78	75	73	72	300.3	66
July	12	13	13	17	24	27	30	45	48	49	52	49	48	50	48	49	167.8	37
August	0	22	21	28	31	35	47	49	60	63	65	60	56	50	49	55	195.5	46
September	.....	19	13	17	23	21	37	46	51	58	57	55	47	42	52	.....	144.9	39
October	.....	55	31	33	41	43	47	58	60	67	59	57	51	51	.....	.....	172.6	50
November	.....	.....	18	16	52	42	42	43	33	35	32	32	19	.....	.....	.....	96.9	33
December	.....	.....	.....	19	30	36	43	54	56	57	46	46	39	.....	.....	.....	125.2	44
Sum	53	201	233	323	436	503	602	657	659	703	688	656	576	505	386	210	2,059.5	547
Percentage of possible	.....	.....	.....	27	36	42	50	55	55	58	57	55	48	.....	.....	.....	171.6	46
1900.																		
January	.....	.....	.....	24	31	41	50	48	51	54	48	42	38	59	.....	.....	129.5	43
February	.....	.....	3	14	21	32	51	54	54	49	46	51	34	25	.....	.....	117.4	39
March	.....	33	25	27	34	40	47	52	44	44	36	29	26	18	17	.....	130.6	35
April	0	47	45	51	56	60	59	64	66	64	60	63	62	60	54	.....	232.4	58
May	28	24	30	50	48	59	65	64	58	60	61	56	51	45	33	48	228.6	50
June	13	13	18	23	34	45	46	53	58	64	60	53	47	42	34	32	184.4	41
July	14	12	15	20	28	44	58	68	77	79	79	76	71	67	65	65	246.4	54
August	100	32	33	32	42	54	61	69	74	70	73	75	73	75	69	95	255.2	60
September	.....	20	25	31	48	54	59	69	78	74	71	74	65	54	50	.....	214.3	59
October	.....	0	21	28	40	50	56	55	61	51	47	42	38	38	.....	.....	154.3	45
November	.....	.....	17	18	30	39	39	42	43	37	36	21	15	.....	.....	.....	95.7	32
December	.....	.....	.....	27	30	47	54	51	50	52	53	45	38	.....	.....	.....	131.1	46
Sum	155	181	232	345	442	565	645	689	714	698	670	627	558	483	322	240	2,114.9	562
Percentage of possible	.....	.....	.....	29	37	47	54	57	60	58	56	52	46	.....	.....	.....	176.2	47

Some time ago the observer at Eureka arranged with the Humboldt Jetty office for gratuitous daily information respecting the approximate force and direction of the wind and the condition of the ocean adjacent to the bay. To the harbor entrance is a distance of about 7 miles, and the two jetties there extend out into the ocean 7,000 feet. Very often when outside there is a gale with an extremely rough sea; inside there is a calm or a wind from a different direction.

Herewith is a rough sketch of the coast from Cape Mendocino to Patricks Point, a distance of about 40 miles. The coast line is some 10 miles east of a line joining the bluff points of Cape Mendocino and Patricks Point. Still farther to the east the hills form a greater curve, placing the lowlands on which Eureka stands in a protected position from the northwest, east, and southeast, and greatly modifying the conditions prevailing beyond the limits of the area shown in the sketch.

By running a line from the cape to the point one will probably discover that during a severe southeast storm from, say, 20 to 50 miles off coast there is often inside the line or near the coast but a moderate wind. Moreover, a west to northwest wind is much more severe outside than inside this line. The force of southeast winds is no doubt frequently broken by Cape Mendocino and the adjacent hills. Greatly modified in intensity and somewhat deflected, they again approach the coast north of Patricks Point; but in a heavy south wind the resistance of the cape seems inconsiderable. Often in summer, during a moderate wind of 15 miles or more at sea, near the coast and even on the bay it will blow quite strongly. On this coast only seldom does a wind for any great length of time blow directly from the southwest. On its approach to the land it will veer either to the south or to the northwest. During a southeast wind along the coast there is invariably a southwest wind at sea. After a southeast storm a heavy sea from the southwest causes the bay to become rough and extremely dangerous for vessels. Frequently on approaching the coast northwesterly winds will be met by warm currents of air from the land. The result in every instance is fog, and generally a material reduction in the force of the wind. In forecasting southeast storms the high hills east and southeast of this station and extending to Cape Mendocino should be allowed for.

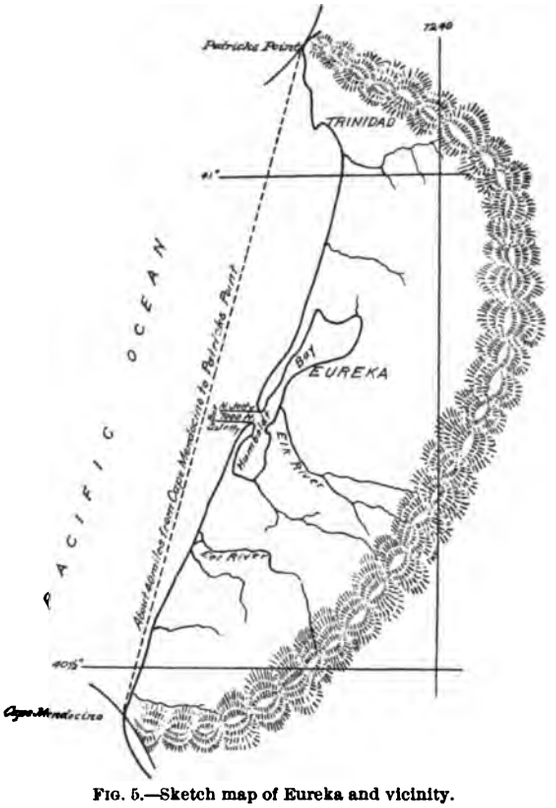

FIG. 5.—Sketch map of Eureka and vicinity.

CLIMATE OF SAN FRANCISCO.

On the coast of California there is a city justly famed for the abnormalities of its climate. Overcoats and heavy wraps are worn in midsummer, while the lilies bloom in December. From May until September very little rain falls, yet during this period with clock-like regularity great banks of fog march in every afternoon and cover the bare, brown hills. The city of San Francisco, the gateway to the Orient, as it has been termed, is strangely situated with respect to ocean, bay, mountain, and valley. It may perhaps be said of this city that nowhere else can such a strange mixture of marine and continental climates be found. The topography is such that marked contrasts can be found within comparatively short distances. Certainly the climatologist finds in the vicinity of San Francisco so many climatic anomalies that he feels as if he

were in fact present in a great natural aero-physical laboratory where daily experiments were being performed on a large scale. In building this meteorological laboratory at San Francisco nature also provided seats wherefrom we can obtain excellent views of the experiments while in progress. From the Weather Bureau station on Mount Tamalpais—elevation of station, 2,373 feet—one looks down on the broad expanse of the Pacific, nearly 20,000,000 square miles of water, to the north, west, and south. From the open roadstead of Drakes Bay the eye passes over the Sausalito hills to the headlands of Points Bonita and Lobos, marking the entrance to the Golden Gate. This passage plays an important rôle in connection with the winds, temperatures, and fogs of the San Francisco Bay region. At mean tide the area of San Francisco Bay is about 450 square miles.

Far on the eastern horizon, especially on clear winter days, the snow of the Sierra—155 miles distant—can be seen glistening. These mountains vary in height from 8,000 to 14,000 feet.

Extending from the slopes of the Sierra to the Coast Range is a great basin 500 miles long and about 50 wide. The Sacramento and San Joaquin rivers, flowing through this basin, unite in Suisun Bay. This great inland basin, surrounded by mountain walls, is connected with the Pacific Ocean by the gate at San Francisco, San Francisco Bay, San Pablo Bay, Carquinez Straits, and Suisun Bay. Here, then, is an aero-physical laboratory par excellence. Now for the results.

When a native of San Francisco is asked which is the coldest month of the year, he is generally at a loss for an answer; and if asked which is the warmest he may say November. This confusion arises from the comparatively small range of temperature. The mean annual temperature, as determined from the records of the Weather Bureau for thirty-one years is 56.1° F. May and November have practically the same temperature. The warmest month is September, 60.8°; the coldest, January, 50.2°. The other months have mean temperatures as follows: February, 52°; March, 54°; April, 55°; May, 57°; June, July, and August, 59°; October, 60°; November, 56°; December, 52°.

The highest temperature ever recorded at San Francisco was 100°, on June 29, 1891, and the lowest 29°, on January 15, 1888. Abnormally warm and cold periods last, as a rule, about three days. The mean of the three consecutive warmest days at San Francisco has never exceeded 76.3°. A period of warm weather during the summer months is, as a rule, brought to a close about the evening of the third day with strong west winds, dense fog, and temperatures ranging from 49° to 54°. The mean of the three consecutive coldest days was 40.7°. The greatest daily range of temperature was 43°, on June 29, 1891. This was the date when the temperature reached 100°. The range of temperature was from 100° to 57°. The morning was calm and very warm, while at 5 p. m. the temperature was 80° and next morning 74°.

In the past thirty years the number of days on which snow has fallen can be counted on the ten fingers. Thunderstorms likewise are infrequent, but not altogether unknown. Earthquakes, meaning by this all slight shocks and tremors, average about 7 per annum. Very little damage has been done by earthquakes during the past fifty years.

The people in San Francisco have long realized that winter and sur[illegible]ly relative terms. Thus at any of the ferries on a midsummer day one can see s[illegible]rn with heavy wraps, and it is not unusual to see white duck and sealskin in[illegible]itors to the city should by all means wear heavy wraps or overcoats during t[illegible].

The experiments of the observers of the Weather Bureau duri[illegible]s with kites have thrown much light upon the causes of the climatic abno[illegible]at San Francisco; and, among other things, it has become evident that in [illegible] from the ground the temperature rises. For each 155 feet of elevatio[illegible]1° F. warmer, and so on any of the hills or mountains in the vicinity of [illegible] find with very little effort the climate best suited for him. In other w[illegible] San Francisco Bay section can regul[illegible]e temperature to suit himsel[illegible]een these limits: 55° at sea level an[illegible]000 feet above.

With regard to rainfall, during the summer months, San Francisco is practically rainless. By referring to the accompanying charts it will be seen that in June, July, August, and September showers are very rare. The average rainfall is about 23 inches, and most of this falls during the months of November, December, January, February, and March. Looking over the records of the past fifty years we find that the year 1898 had but 9.31 inches, while in 1883 there was 38.82 inches. In 1861 there was 38.51 inches.

SEASONAL RAINFALL.

The annual rainfalls do not, however, fairly represent the amount of rainfall determining crop yield. Both with fruits and grains it is the seasonal rainfall rather than the annual which is to be considered. In the wheat fields summer fallowing is resorted to chiefly for the reason that the rain of two seasons can be utilized. As may be seen by the tables of annual and seasonal rainfall, published in following pages, the amounts during the growing season vary from the totals for the calendar year; thus, in 1889–90 the seasonal rainfall was 45.85 inches. The annual rainfall for 1890 was but 25.43 inches, an unusually heavy rainfall in December, 1889, having contributed to materially increase the seasonal amount.

Frequency as well as intensity should also be taken into account in considering the relation of rainfall and crops.

MONTHLY MEAN TEMPERATURES (DEGREES FAHRENHEIT).

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1871	.....	.....	51.3	53.3	54.3	56.9	56.6	57.9	60.4	61.8	55.1	52.9	56.0
1872	52.2	54.2	54.3	53.4	56.0	59.8	57.9	59.8	59.3	58.8	56.0	52.1	56.2
1873	54.8	50.9	54.5	54.6	55.4	57.1	58.1	59.5	58.3	59.7	57.7	50.7	55.9
1874	49.3	51.2	50.9	54.9	57.6	59.1	57.8	59.0	61.4	59.8	56.1	50.3	55.6
1875	49.0	52.0	51.8	55.4	57.2	59.4	58.8	58.8	59.2	62.0	57.4	51.4	56.0
1876	48.8	52.8	53.2	55.4	56.8	61.4	59.1	59.6	61.5	59.9	58.0	53.0	56.6
2877	54.3	55.8	57.2	54.4	56.2	62.0	60.8	59.8	62.5	59.2	57.2	52.7	57.7
1878	52.8	53.3	55.9	56.0	58.0	58.8	58.6	59.1	60.2	61.6	57.1	51.6	56.9
1879	48.8	54.6	57.2	56.5	56.4	60.2	58.7	60.5	61.0	61.0	55.0	50.0	56.7
1880	48.0	48.8	49.4	53.3	57.7	57.2	58.8	59.1	58.9	59.8	54.2	53.2	54.9
1881	54.0	55.3	54.4	57.9	58.0	58.6	59.7	58.8	59.7	56.6	55.1	51.0	56.6
1882	49.4	48.8	53.4	53.0	57.0	57.9	59.5	58.6	59.8	58.8	53.2	52.8	55.2
1883	47.0	48.8	54.0	53.2	58.0	61.4	59.8	59.2	63.1	57.9	54.1	50.8	55.6
1884	50.6	50.8	54.5	56.0	59.4	60.2	61.4	60.0	59.6	58.2	57.4	52.8	56.7
1885	51.1	55.3	57.7	58.2	58.1	57.8	61.6	59.6	61.8	60.7	57.8	54.0	57.8
1886	51.2	56.8	53.6	55.4	59.1	59.4	60.3	60.6	62.4	58.6	56.8	53.6	57.3
1887	52.6	47.8	55.8	55.8	57.0	59.4	56.6	57.8	62.0	64.2	56.4	52.2	56.5
1888	46.7	53.9	53.4	57.8	56.9	62.4	61.4	60.8	62.6	61.6	57.0	53.2	57.3
1889	50.4	54.0	57.2	58.8	58.8	60.2	58.8	60.4	64.6	61.8	58.6	51.3	57.9
1890	46.2	49.1	53.8	54.8	59.8	59.2	59.8	61.4	60.4	62.4	59.0	49.8	56.3
1891	52.2	51.1	55.0	53.4	55.7	60.2	59.4	61.8	61.8	59.7	58.6	49.6	56.6
1892	51.7	52.4	54.2	53.1	58.0	56.8	58.1	59.4	60.2	59.6	56.9	51.1	56.0
1893	47.4	50.3	51.2	52.4	55.8	56.5	56.6	56.6	59.3	57.6	55.6	52.4	54.3
1894	47.7	48.4	50.6	55.2	55.4	55.9	56.4	59.2	63.4	59.6	59.4	49.7	55.1
1895	48.6	53.8	52.2	54.8	57.6	58.7	58.4	58.4	60.7	58.8	56.2	48.6	55.6
1896	52.2	55.3	54.3	51.6	56.3	57.2	59.4	59.5	59.6	58.8	53.4	52.8	55.9
1897	48.6	50.7	48.9	57.4	57.4	58.9	58.2	57.4	60.8	58.4	53.1	50.7	55.0
1898	46.7	52.6	51.2	54.4	52.6	59.0	56.2	57.0	59.0	61.2	55.4	49.7	54.6
1899	53.0	51.6	52.2	54.6	52.6	56.9	55.9	58.3	58.2	59.3	56.8	49.6	55.0
1900	50.7	53.6	55.2	54.0	57.0	57.6	58.2	59.7	63.3	58.8	56.3	50.2	56.2
1901	49.8	52.2	55.8	51.8	53.9	56.7	55.6	56.4	58.5	61.8	57.2	52.9	55.2
Means, 31 years, except January and February	50.2	52.2	53.7	54.9	56.8	58.8	58.6	59.2	60.8	60.0	56.4	51.5	56.1

SUMMARY OF MONTHLY MEAN TEMPERATURES (DEGREES FAHRENHEIT).

Month	Highest monthly mean.		Lowest monthly mean.		Absolute maximum.		Absolute minimum.		Greatest daily range.	Mean daily range.	Mean variability.	Mean of three consecutive warmest days.[a]	Mean of three consecutive coldest days.[a]
	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.					
January	1873	54.8	1890	46.2	26, 1899	78.0	15, 1888	29.0	24.0	9.9	2.2	67.0	42.0
February	1886	56.8	1887	47.8	18, 1899	80.0	5, 1887	33.0	27.0	10.7	2.0	64.7	40.7
March	1885	57.7	1897	48.9	7, 1892	80.0	3, 1896	33.0	28.0	11.3	2.5	67.7	40.7
April	1889	58.8	1891	51.6	14, 1888	88.0	7, 1891	40.0	34.0	11.7	2.7	68.7	48.3
May	1890	59.8	1898	52.6	28, 1887	97.0	1, 1899	43.0	39.0	12.0	2.9	73.7	49.7
June	1888	62.4	1894	55.9	29, 1891	100.0	19, 1893	47.0	43.0	12.5	2.4	76.0	52.3
July	1885	61.6	1898	56.2	15, 1888	93.0	31, 1893	47.0	36.0	11.5	2.4	66.3	50.0
August	1891	61.8	1893	56.6	22, 1891	92.0	8, 1893	47.0	38.0	11.4	2.4	76.0	52.7
September	1889	64.6	1873	58.3	22, 1894	94.0	30, 1894	49.0	35.0	13.3	3.0	76.3	54.0
October	1887	64.2	1881	56.6	8, 1899	94.0	14, 1881	45.0	31.0	13.3	3.5	71.7	51.7
November	1894	59.4	1897	53.1	16, 1895	83.0	27, 1896	38.0	25.0	11.3	2.6	69.3	44.7
December	1885	54.0	1895	48.6	8, 1893	72.0	24, 1879	34.0	21.0	9.3	2.2	62.0	42.3
Annual	1889	57.9	1893	54.3	[b]1891	100.0	[c]1888	29.0	43.0	11.5	2.6	76.3	40.7

[a] Record subsequent to January 1, 1891. [b] June 29. [c] January 15.

WEATHER.

Month.	Average number of—				Month.	Average number of—			
	Clear days.	Partly cloudy days.	Cloudy days.	Rainy days.		Clear days.	Partly cloudy days.	cloudy days.	Rainy days.
January	11	10	10	11	August	10	15	6	0
February	10	10	8	10	September	14	12	4	2
March	11	11	9	10	October	16	11	4	4
April	12	12	6	7	November	15	9	6	7
May	13	12	6	4	December	12	10	9	11
June	14	11	5	2	Annual	149	137	79	69
July	11	14	6	1					

AVERAGE TEMPERATURE (DEGREES FAHRENHEIT) FOR EACH HOUR OF SEVENTY-FIFTH MERIDIAN TIME.

[λ=37° 48′ N.; φ=122° 26′ W.]

1900.	1h a. m.	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	Noon.	1h p. m.
January	50.1	49.8	49.2	49.0	48.5	48.2	48.2	48.8	48.2	47.6	47.5	48.0	49.1
February	52.0	51.3	50.9	50.7	50.0	49.6	49.5	49.9	49.0	48.6	48.7	49.9	51.4
March	52.8	51.8	51.4	50.7	50.6	50.4	50.1	51.2	50.2	49.7	50.5	52.0	53.7
April	51.4	51.1	50.6	50.3	50.1	49.7	49.4	50.1	49.1	49.8	51.5	53.4	55.4
May	53.9	53.3	52.7	52.3	51.8	51.5	51.5	52.2	51.2	53.2	55.4	57.4	59.4
June	54.4	53.6	53.1	52.7	52.4	52.1	52.0	53.1	52.5	54.0	55.8	56.8	58.9
July	53.8	53.6	53.5	53.1	52.8	52.6	52.6	53.5	52.4	54.7	57.1	59.0	60.8
August	56.8	56.4	56.0	55.7	55.1	54.9	55.1	55.8	54.7	55.6	57.5	59.4	61.3
September	60.0	59.3	58.8	58.5	58.1	57.9	57.6	58.7	57.4	58.5	60.5	62.5	64.8
October	56.1	55.8	55.1	54.6	53.9	53.7	53.5	54.7	53.5	53.9	55.2	56.5	58.7
November	55.5	54.9	54.2	54.0	53.3	52.9	52.4	53.9	52.5	52.0	52.6	54.1	55.4
December	49.5	48.8	48.2	47.5	47.1	46.9	47.1	48.4	47.2	46.9	47.1	48.3	49.4
Year	53.9	53.3	52.8	52.4	52.0	51.7	51.6	52.5	51.5	52.0	53.3	54.8	56.5

AVERAGE TEMPERATURE (DEGREES FAHRENHEIT) FOR EACH HOUR OF SEVENTY-FIFTH MERIDIAN TIME—Continued.

[h_t=161 ft.; local time, 3h 10m slow.]

1900.	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	Mid.	Mean.	Mean max.	Mean min.
January	50.3	51.6	52.8	53.4	53.9	53.6	52.9	52.5	51.9	51.3	50.5	50.3	54.7	46.7
February	53.2	55.0	56.9	58.2	58.6	57.8	56.9	55.3	54.5	53.7	53.1	52.7	59.5	47.8
March	55.5	57.4	58.9	59.9	59.5	57.8	57.0	55.5	54.5	53.8	53.2	53.7	61.3	49.1
April	56.6	57.5	58.1	57.8	57.5	56.9	55.8	55.0	53.8	52.6	52.2	53.2	59.5	48.4
May	60.8	61.8	62.1	61.9	61.8	60.0	59.0	57.8	56.1	54.9	54.5	56.1	63.5	50.6
June	60.5	62.1	62.2	62.0	61.5	60.2	59.6	58.3	57.0	55.8	55.1	56.5	63.7	51.6
July	61.9	62.3	62.8	62.4	61.4	60.7	59.8	58.2	56.5	55.4	54.6	56.9	64.6	51.9
August	62.8	63.6	63.7	63.2	62.5	61.4	60.7	59.5	58.6	57.5	57.2	58.5	65.5	53.9
September	66.4	68.3	68.3	67.9	66.9	65.3	64.7	63.1	62.0	61.3	60.5	62.0	70.4	56.2
October	60.3	62.4	63.4	63.8	63.1	61.7	60.4	59.3	58.4	57.5	56.9	57.6	65.1	52.4
November	56.3	58.0	59.2	60.1	60.1	59.6	58.7	57.9	57.2	56.6	56.0	55.7	62.2	50.4
December	50.5	52.0	52.9	53.6	54.0	53.3	52.8	52.5	51.6	50.8	50.0	49.8	55.1	45.4
Year	57.9	59.3	60.1	60.4	60.1	59.0	58.2	57.1	56.0	55.1	54.5	55.2	62.1	50.4

AVERAGE PRESSURE (INCHES AND THOUSANDTHS) FOR EACH HOUR OF SEVENTY-FIFTH MERIDIAN TIME.

[λ=37° 48′ N.; φ=122° 26′ W.; local time, 3h 10m slow. H=155 ft.]

1900.	1h a. m	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	Noon.	1h p. m.
January	29.985	0.987	0.983	0.978	0.980	0.982	0.975	0.969	0.971	0.978	0.990	0.006	0.020
February	29.998	0.001	0.001	0.999	0.000	0.995	0.991	0.992	0.998	0.006	0.020	0.029	0.037
March	29.881	0.881	0.880	0.879	0.875	0.866	0.863	0.864	0.871	0.878	0.890	0.900	0.905
April	29.849	0.850	0.848	0.843	0.837	0.832	0.831	0.832	0.843	0.853	0.860	0.866	0.871
May	29.863	0.861	0.860	0.855	0.849	0.846	0.845	0.846	0.855	0.865	0.872	0.875	0.877
June	29.815	0.814	0.806	0.804	0.800	0.795	0.795	0.798	0.806	0.814	0.827	0.828	0.829
July	29.737	0.739	0.737	0.735	0.731	0.730	0.732	0.737	0.748	0.759	0.771	0.774	0.775
August	29.805	0.804	0.803	0.800	0.795	0.794	0.793	0.798	0.807	0.817	0.826	0.831	0.835
September	29.796	0.797	0.799	0.799	0.797	0.796	0.796	0.800	0.809	0.820	0.824	0.831	0.833
October	29.859	0.862	0.861	0.862	0.863	0.858	0.856	0.859	0.866	0.873	0.883	0.890	0.894
November	29.898	0.899	0.896	0.892	0.892	0.888	0.887	0.887	0.895	0.904	0.914	0.923	0.932
December	30.052	0.054	0.049	0.048	0.047	0.044	0.038	0.029	0.034	0.034	0.045	0.056	0.070
Year	29.878	0.879	0.877	0.874	0.872	0.869	0.867	0.868	0.875	0.883	0.894	0.901	0.906

[Correction applied to reduce to standard gravity—0.02.]

1900.	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	Mid.	Mean.	Mean max.	Mean min.
January	0.021	0.999	0.981	0.971	0.968	0.970	0.968	0.974	0.981	0.986	0.992	0.984	0.048	0.930
February	0.035	0.020	0.002	0.985	0.977	0.972	0.968	0.972	0.978	0.981	0.988	0.998	0.062	0.935
March	0.903	0.895	0.881	0.867	0.857	0.850	0.845	0.847	0.852	0.864	0.839	0.872	0.922	0.820
April	0.870	0.864	0.856	0.847	0.837	0.831	0.828	0.827	0.829	0.842	0.851	0.846	0.893	0.798
May	0.875	0.869	0.861	0.855	0.846	0.838	0.833	0.830	0.832	0.840	0.852	0.854	0.901	0.809
June	0.828	0.824	0.818	0.810	0.802	0.794	0.786	0.783	0.787	0.793	0.804	0.807	0.846	0.765
July	0.775	0.772	0.764	0.754	0.742	0.733	0.723	0.723	0.728	0.733	0.741	0.745	0.785	0.707
August	0.834	0.827	0.819	0.812	0.802	0.792	0.787	0.782	0.783	0.789	0.798	0.806	0.848	0.759
September	0.826	0.818	0.808	0.794	0.784	0.777	0.773	0.777	0.781	0.789	0.796	0.801	0.847	0.747
October	0.891	0.883	0.868	0.855	0.849	0.844	0.840	0.844	0.850	0.859	0.866	0.864	0.913	0.812
November	0.927	0.918	0.900	0.889	0.883	0.879	0.879	0.884	0.890	0.893	0.898	0.898	0.961	0.837
December	0.062	0.048	0.035	0.025	0.023	0.023	0.025	0.029	0.035	0.039	0.044	0.041	0.097	0.991
Year	0.904	0.894	0.883	0.872	0.864	0.859	0.855	0.856	0.860	0.867	0.872	0.876	0.927	0.826

Sunshine for the Years 1898, 1899, and 1900.

[N. lat. 37° 48′.]

	Percentage of sunshine recorded during hours ending (local time)—																Total (hours).	Percentage of possible.
	5h a. m.	6h	7h	8h	9h	10h	11h	Noon.	1h	2h	3h	4h	5h	6h	7h	8h		
1898.																		
January	.....	.....	.....	28	52	75	79	83	81	84	75	58	48	46	.....	.....	204.9	67
February	.....	.....	0	7	28	46	64	76	72	75	76	70	54	18	.....	.....	162.3	54
March	.....	8	26	55	69	75	81	86	94	93	89	87	85	54	52	.....	277.5	75
April	.....	23	35	54	83	90	100	100	100	100	98	92	80	75	40	.....	313.3	79
May	16	10	27	42	62	73	83	85	85	80	79	75	67	46	27	29	262.9	60
June	22	32	47	68	77	81	87	94	95	95	94	92	83	70	54	45	328.3	74
July	11	13	36	40	60	80	96	98	100	100	99	97	92	70	44	40	322.5	72
August	.....	3	16	36	46	73	91	99	99	99	97	93	86	65	30	0	288.3	68
September	.....	20	27	33	55	75	90	96	97	96	98	91	74	48	58	.....	268.6	72
October	.....	10	17	54	82	95	94	93	96	96	92	88	76	36	.....	.....	277.0	80
November	.....	.....	31	40	61	74	86	90	93	96	96	84	49	0	.....	.....	231.0	76
December	.....	.....	.....	31	58	74	76	86	87	85	83	75	39	.....	.....	.....	201.3	71
Sum	49	119	262	488	733	911	927	986	1,099	1,099	1,076	1,002	833	528	305	114	3,137.9	848
Percentage of possible	.....	.....	.....	41	61	76	76	82	92	92	90	84	69	.....	.....	.....	261.5	71
1899.																		
January	.....	.....	.....	7	24	46	59	67	68	66	64	60	27	31	.....	.....	152.1	50
February	.....	.....	30	22	49	68	79	86	94	95	93	92	68	32	.....	.....	215.7	71
March	.....	17	21	40	50	58	63	65	62	63	63	55	55	31	0	.....	192.9	52
April	.....	51	53	60	79	82	91	96	98	95	96	99	96	81	67	.....	327.7	88
May	55	58	59	71	82	85	96	97	97	96	97	96	88	74	68	64	365.1	85
June	53	56	60	69	83	96	99	97	100	100	100	100	98	86	79	77	382.4	86
July	15	17	25	31	48	65	81	93	96	96	99	97	85	66	38	30	294.1	65
August	.....	19	38	43	54	80	90	95	94	97	100	100	88	62	47	0	308.4	73
September	.....	23	19	38	70	90	96	100	100	100	100	100	98	58	60	.....	292.5	78
October	.....	100	64	62	72	77	84	86	88	89	85	82	71	76	.....	.....	272.5	73
November	.....	.....	26	27	33	40	52	51	59	52	54	38	19	0	.....	.....	129.1	42
December	.....	.....	0	47	47	61	73	75	78	71	68	62	58	.....	.....	.....	190.5	64
Sum	123	341	395	517	691	850	963	1,008	1,029	1,020	1,019	981	851	597	359	171	3,123.0	825
Percentage of possible	.....	.....	.....	43	58	71	80	84	86	85	85	82	71	.....	.....	.....	260.2	69
1900.																		
January	.....	.....	.....	22	24	33	41	59	67	68	67	50	43	41	.....	.....	146.8	48
February	.....	.....	28	32	58	74	88	82	87	86	87	85	71	63	.....	.....	222.3	74
March	.....	17	21	22	45	69	69	79	82	87	81	73	56	43	57	.....	226.5	61
April	.....	55	54	53	61	71	70	75	88	85	86	79	68	45	44	.....	266.5	67
May	84	65	66	69	80	83	92	93	97	98	93	89	80	67	62	79	358.1	81
June	26	27	27	40	49	68	84	93	96	96	93	89	81	62	53	54	296.3	67
July	55	45	46	59	78	92	97	95	99	98	96	94	89	72	61	64	357.8	79
August	.....	54	55	65	70	82	89	94	93	98	98	89	77	58	53	100	327.7	78
September	.....	60	67	70	78	84	87	87	95	92	93	89	87	77	72	.....	309.9	83
October	.....	45	51	53	65	77	86	92	97	95	89	81	69	60	.....	.....	268.9	77
November	.....	.....	33	34	46	62	79	88	84	88	85	66	41	0	.....	.....	202.9	67
December	.....	.....	100	39	48	54	62	73	75	73	70	59	46	.....	.....	.....	180.0	61
Sum	165	368	548	558	702	849	944	1,010	1,060	1,064	1,038	943	803	588	402	297	3,163.7	843
Percentage of possible	.....	.....	.....	46	58	71	79	84	88	89	86	79	67	.....	.....	.....	263.6	70

Annual Meteorological Summary for the Years 1899 and 1900.[a]

[λ=37° 48′ N.; φ=122° 26′ W.; gravity corr., −0.02.]

Date.	Pressure.			Temperature.							Moisture.										
		Extremes.		Mean.					Extremes.		Dew-point.		Relative humidity.		Vapor pressure.		Precipitation.		Cloudiness.		
	Monthly mean.	Maximum.	Minimum.	8 a. m.	8 p. m.	Maximum.	Minimum.	Monthly.	Maximum.	Minimum.	8 a. m.	8 p. m.	8 a. m.	8 p. m.	8 a. m.	8 p. m.	Total.	Maximum in 24 hours.	8 a. m.	8 p. m.	Daylight.
1899.	*In.*	*In.*	*In.*	°	°	°	°	°	°	°	°	°	%	%	*In.*	*In.*	*In.*	*In.*			
January	29.98	30.24	29.35	50.1	56.1	58.3	47.6	53.0	78	40	46	46	86	74	0.312	0.315	3.67	0.98	4.8	7.0	6.7
February	29.90	30.34	29.62	47.5	54.4	58.0	45.3	51.6	80	34	44	46	88	75	0.295	0.321	0.10	0.08	2.6	3.3	4.6
March	29.89	30.21	29.58	49.1	54.7	57.3	47.1	52.2	74	42	47	48	92	81	0.321	0.342	7.61	2.15	4.6	6.4	6.5
April	29.87	30.05	29.61	49.6	57.6	61.2	47.9	54.6	80	43	45	45	87	66	0.307	0.311	0.62	0.45	2.9	3.0	3.0
May	29.87	30.03	29.61	48.2	54.5	58.3	46.9	52.6	80	43	44	45	88	70	0.295	0.297	0.86	0.77	2.6	2.0	2.6
June	29.78	29.97	29.56	52.0	58.0	63.4	50.4	56.9	75	47	49	50	92	74	0.353	0.354	0.01	0.01	3.7	1.5	2.0
July	29.78	29.93	29.64	51.5	57.1	61.5	50.3	55.9	73	48	50	51	95	80	0.359	0.370	0.00	0.00	6.3	2.4	3.6
August	29.78	29.86	29.66	54.7	60.0	63.5	53.1	58.3	78	50	52	52	92	77	0.391	0.395	T.	T.	7.0	2.5	3.3
September	29.83	29.96	29.61	52.4	58.8	65.1	51.3	58.2	73	48	52	53	98	81	0.382	0.399	0.00	0.00	3.1	1.7	3.0
October	29.83	30.12	29.45	55.2	60.8	66.1	52.5	59.3	94	46	50	50	85	71	0.364	0.364	3.92	1.94	3.8	3.6	3.0
November	29.88	30.10	29.48	54.4	58.6	61.0	52.6	56.8	65	48	52	53	90	82	0.383	0.402	3.79	1.51	4.9	6.4	5.8
December	29.98	30.33	29.59	46.9	52.0	54.8	44.4	49.6	63	37	44	44	89	76	0.290	0.296	2.65	1.17	2.1	4.7	3.8
Year	29.87	30.34	29.35	51.0	56.9	60.7	49.1	54.9	94	34	48	49	90	76	0.338	0.347	23.23	2.15	4.0	3.7	4.0
1900.																					
January	29.97	30.17	29.63	48.8	52.9	54.7	46.7	50.7	64	42	46	48	90	84	0.310	0.335	4.11	1.92	5.6	5.7	5.8
February	29.98	30.20	29.62	49.9	56.8	59.5	47.8	53.6	68	44	46	46	88	69	0.315	0.313	0.64	0.50	3.9	4.4	3.8
March	29.85	30.12	29.65	51.2	57.0	61.3	49.1	55.2	71	43	48	49	89	76	0.335	0.350	1.91	0.90	4.8	4.6	4.5
April	29.83	30.00	29.54	50.2	55.8	59.5	48.4	54.0	69	45	44	46	81	70	0.294	0.312	1.08	0.36	3.8	4.3	3.8
May	29.84	30.03	29.67	52.2	59.0	63.5	50.6	57.0	71	47	48	49	86	70	0.337	0.348	0.32	0.22	3.9	4.0	3.3
June	29.79	29.96	29.63	53.2	59.6	63.7	51.6	57.6	74	47	51	52	94	76	0.377	0.390	0.05	0.04	6.5	3.7	3.9
July	29.73	29.94	29.54	53.5	59.8	64.6	51.9	58.2	73	48	51	52	92	75	0.374	0.381	T.	T.	4.9	1.4	2.0
August	29.79	30.03	29.59	55.8	60.7	65.5	53.9	59.7	82	50	52	52	90	76	0.396	0.398	T.	T.	4.7	3.2	3.4
September	29.79	29.98	29.41	58.6	64.7	70.4	56.2	63.3	92	47	53	51	84	66	0.409	0.380	0.46	0.45	2.9	2.4	2.6
October	29.85	30.07	29.56	54.8	60.4	65.1	52.4	58.8	83	48	51	50	88	71	0.381	0.368	1.48	0.34	4.1	3.9	3.9
November	29.88	30.15	29.28	53.9	58.7	62.2	50.4	56.3	79	45	50	50	88	75	0.366	0.361	3.91	1.66	4.6	5.2	5.4
December	30.03	30.17	29.68	48.4	52.8	55.1	45.4	50.2	68	40	44	46	86	78	0.298	0.311	1.37	0.74	4.8	4.7	5.0
Year	29.86	30.20	29.28	52.5	58.2	62.1	50.4	56.2	92	40	49	49	88	74	0.349	0.354	15.33	1.92	4.5	4.0	4.0

[a] From observations at 8 a. m. and 8 p. m. 76th meridian time. Local mean time 8 h. 10 m. slow.

ANNUAL METEOROLOGICAL SUMMARY FOR THE YEARS 1899 AND 1900—Continued.

[H=155 ft.; ht=161 ft.; hr=154 ft.; ha=167 ft.]

Date.	Wind.														Number of days.												
	By self-registers.					Number of winds, 8 a. m. and 8 p. m.												Precipitation.					Maximum temp.		Minimum temperature below 32°.	Electricity	
	Average hourly velocity.	Prevailing direction.	Maximum velocity.	Direction at time of maximum velocity.	Number of days with gales.	North.	Northeast.	East.	Southeast.	South.	Southwest.	West.	Northwest.	Calm.	Clear.	Partly cloudy.	Cloudy.	0.01 inch and over.	0.04 inch and over.	Snow.	Hail.	Fog.	Below 32°.	Above 90°.		Thunderstorms.	Auroras.
1899.	*Miles.*		*Mi.*																								
January	7.9	SE.	47	SW.	2	14	5	4	11	2	6	10	10	0	5	11	15	11	9	0	0	3	0	0	0	0	0
February	8.7	W.	39	W.	0	6	0	1	4	2	11	25	7	0	11	10	7	2	1	0	0	5	0	0	0	0	0
March	9.8	W.	36	W.	0	2	1	1	7	9	16	25	1	0	6	9	16	15	10	0	1	0	0	0	0	0	0
April	11.7	W.	38	W.	0	3	0	0	3	3	10	33	8	0	18	10	2	5	3	0	0	1	0	0	0	0	0
May	13.9	W.	37	W.	0	0	0	0	2	5	13	41	1	0	21	7	3	2	2	0	0	1	0	0	0	0	0
June	14.2	W.	44	W.	3	1	0	0	0	1	21	37	0	0	23	5	2	1	0	0	0	1	0	0	0	0	0
July	15.3	SW.	41	W.	1	0	0	0	0	0	35	27	0	0	16	11	4	0	0	0	0	0	0	0	0	0	0
August	14.4	SW.	39	W.	0	0	0	0	1	0	27	33	1	0	18	11	2	0	0	0	0	0	0	0	0	0	0
September	12.6	SW.	40	W.	1	0	0	0	1	1	23	35	0	0	20	8	2	0	0	0	0	3	0	0	0	0	0
October	8.5	W.	41	W.	1	3	2	2	4	9	11	28	3	0	21	5	5	9	6	0	0	1	0	1	0	0	0
November	6.6	SE.	30	SW.	0	12	2	3	11	6	6	16	4	0	8	11	11	12	11	0	0	2	0	0	0	0	0
December	8.6	N.	30	SW.	0	18	2	1	7	3	8	8	15	0	18	6	7	10	10	0	0	1	0	0	0	0	0
Year	11.0	W.	47	SW.	8	59	12	12	51	41	187	318	50	0	185	104	76	67	52	0	1	18	0	1	0	0	0
1900.																											
January	7.2	N.	46	SE.	1	20	3	1	13	5	1	6	13	0	9	11	11	7	6	0	0	0	0	0	0	0	0
February	7.2	W.	32	W.	0	5	3	2	5	2	6	24	9	0	13	10	5	6	2	0	0	0	0	0	0	0	0
March	10.0	W.	35	SW.	0	4	0	1	6	10	15	26	0	0	12	14	5	6	6	0	0	3	0	0	0	0	0
April	11.8	W.	35	W.	0	2	0	0	5	2	13	31	6	1	16	8	6	6	6	0	1	0	0	0	0	0	0
May	12.1	W.	39	W.	0	1	1	0	1	3	9	44	1	2	17	10	4	2	2	0	0	0	0	0	0	0	0
June	14.3	SW.	41	W.	2	0	0	0	0	3	25	32	0	0	15	11	4	2	1	0	0	0	0	0	0	0	0
July	14.5	SW.	37	SW.	0	0	0	0	0	3	27	31	1	0	25	4	2	0	0	0	0	0	0	0	0	0	0
August	13.1	SW.	38	SW.	0	0	0	1	0	2	28	31	0	0	18	10	3	0	0	0	0	0	0	0	0	0	0
September	10.9	W.	32	SW.	0	1	0	0	1	3	22	28	4	1	22	5	3	2	1	0	0	0	0	2	0	0	0
October	9.1	W.	31	SW.	0	3	1	1	3	4	12	36	2	0	15	10	6	9	6	0	0	0	0	0	0	0	0
November	6.9	N.	43	S.	1	12	2	1	2	3	8	15	16	1	8	12	10	9	8	0	0	6	0	0	0	2	0
December	7.3	N.	48	S.	1	23	4	3	4	7	1	3	17	0	11	11	9	6	5	0	1	3	0	0	0	1	0
Year	10.4	W.	48	S.	5	71	14	10	40	47	167	307	69	5	181	116	68	55	43	0	2	12	0	2	0	3	0

SOME MAXIMUM AND MINIMUM TEMPERATURES.

The following tables showing the temperature when the thermometer registered 80° or above and 32° or below (Fahrenheit), with dates of same, were kindly furnished by Mr. Thomas Tennent. The thermometers used by Mr. Tennent were self-registering instruments purchased from McAllister & Co., of Philadelphia, Pa., and brought out by him in 1849; they were tested and found to be correct. The thermometers were exposed on the north side of a building, on supports about 10 inches from the walls and about 6 feet above the ground. The readings were made by Mr. Tennent personally, and cover the period from September 1, 1849, to December 31, 1871:

Maximum temperatures.

	°F.		°F.		°F.
Sept. 6, 1849	80	Sept. 18, 1852	85	May 6, 1865	84
Oct. 13, 1849	81	Nov. 1, 1852	81	June 18, 1865	82
Oct. 15, 1849	84	June 5, 1853	85	June 19, 1865	80
Oct. 16, 1849	85	June 6, 1853	83	Sept. 3, 1865	80
Oct. 17, 1849	80	June 15, 1853	85	Sept. 4, 1865	87
Oct. 18, 1849	81	June 16, 1853	85	Sept. 5, 1865	85
Oct. 27, 1849	82	Sept. 5, 1853	81	Apr. 23, 1866	82
Mar. 28, 1850	82	Sept. 20, 1853	80	June 26, 1866	80
Mar. 29, 1850	82	Oct. 21, 1853	81	Apr. 26, 1867	82
Aug. 18, 1850	82	July 7, 1854	84	July 5, 1867	83
Sept. 18, 1850	80	July 7, 1855	88	July 6, 1867	93
Apr. 27, 1851	80	Sept. 26, 1855	84	July 7, 1867	90
Apr. 28, 1851	85	Sept. 5, 1856	80	Sept. 18, 1867	80
Apr. 29, 1851	81	Sept. 17, 1856	80	Sept. 19, 1867	82
Aug. 18, 1851	82	Sept. 18, 1856	81	Sept. 20, 1867	83
Aug. 19, 1851	81	June 16, 1857	88	Sept. 21, 1867	83
Oct. 18, 1851	86	Sept. 27, 1857	84	Oct. 7, 1868	80
Mar. 22, 1852	81	Sept. 28, 1857	80	Sept. 24, 1869	81
Mar. 23, 1852	80	Sept. 29, 1858	80	Sept. 25, 1869	82
Apr. 17, 1852	80	Sept. 30, 1858	87	Sept. 26, 1869	81
Apr. 18, 1852	84	Oct. 1, 1859	82	May 6, 1870	84
July 29, 1852	80	Oct. 2, 1859	80	May 7, 1870	86
Sept. 1, 1852	80	Apr. 26, 1860	81	July 1, 1870	82
Sept. 9, 1852	84	Sept. 15, 1860	85	July 2, 1870	86
Sept. 10, 1852	94	Sept. 17, 1860	80	Aug. 2, 1870	80
Sept. 11, 1852	94	Oct. 2, 1864	80	Oct. 5, 1870	80
Sept. 16, 1852	85	Oct. 3, 1864	81	Oct. 6, 1870	83
Sept. 17, 1852	85	May 5, 1865	84	Oct. 2, 1871	80

Minimum temperatures.

	°F.		°F.		°F.
Nov. 21, 1849	30	Feb. 9, 1857	32	Mar. 30, 1862	31
Nov. 27, 1849	32	Jan. 7, 1858	31	Mar. 31, 1862	32
Nov. 28, 1849	28	Jan. 14, 1858	32	Apr. 2, 1862	32
Dec. 4, 1849	30	Feb. 9, 1858	32	May 11, 1862	32
Dec. 5, 1849	31	Mar. 18, 1858	32	Dec. 4, 1862	32
Dec. 7, 1849	31	Dec. 3, 1858	32	Dec. 15, 1862	32
Dec. 9, 1849	32	Dec. 7, 1858	28	Dec. 27, 1862	31
Dec. 10, 1849	32	Dec. 8, 1858	29	Dec. 29, 1862	32
Dec. 13, 1849	29	Dec. 9, 1858	32	Dec. 30, 1862	32
Jan. 13, 1850	31	Jan. 7, 1859	32	Jan. 12, 1863	32
Jan. 14, 1850	32	Jan. 9, 1859	29	Jan. 17, 1863	32
Jan. 19, 1850	32	Jan. 10, 1859	28	Feb. 9, 1863	32
Mar. 4, 1850	30	Jan. 11, 1859	29	Jan. 28, 1864	32
Nov. 11, 1850	30	Jan. 12, 1859	30	Dec. 19, 1865	31
Dec. 5, 1850	29	Dec. 22, 1859	32	Dec. 28, 1867	20
Dec. 6, 1850	30	Jan. 18, 1861	32	Jan. 7, 1868	30
Jan. 17, 1851	30	Jan. 3, 1862	32	Jan. 8, 1868	30
Mar. 20, 1851	30	Jan. 4, 1862	26	Jan. 11, 1868	32
Mar. 21, 1851	32	Jan. 24, 1862	32	Jan. 12, 1868	31
Jan. 19, 1854	31	Jan. 25, 1862	32	Jan. 17, 1868	31
Jan. 20, 1854	25	Jan. 26, 1862	29	Jan. 19, 1868	27
Jan. 21, 1854	31	Jan. 27, 1862	29	Jan. 22, 1868	30
Dec. 24, 1855	29	Jan. 28, 1862	22	Dec. 19, 1869	31
Dec. 25, 1855	32	Jan. 29, 1862	27	Dec. 21, 1869	30
Dec. 28, 1855	28	Jan. 31, 1862	25	Dec. 22, 1869	28
Dec. 29, 1855	29	Feb. 1, 1862	29	Dec. 16, 1870	32
Dec. 30, 1855	30	Feb. 2, 1862	29	Dec. 18, 1870	28
Dec. 31, 1855	30	Feb. 3, 1862	32	Dec. 19, 1870	31
Jan. 1, 1856	30	Feb. 4, 1862	32	Dec. 20, 1870	26
Dec. 30, 1856	31	Feb. 7, 1862	31	Dec. 21, 1870	32
Jan. 8, 1857	29	Feb. 8, 1862	32	Dec. 22, 1870	29
Jan. 9, 1857	32	Feb. 20, 1862	32	Dec. 24, 1870	28
Feb. 7, 1857	30	Mar. 9, 1862	31		

NOTES FROM THE RECORD OF G. H. GIBBONS, M. D

1847.

[From the California Star, San Francisco.]

January 19.—Ice nearly one-fourth inch thick—the first of the season; said to be a cold winter.

February 13.—Heavy rains still continue at regular intervals of four to eight days. Already more rain this season than in last three years.

April 3.—A number of heavy rains in last six days. Dry weather for four or five weeks preceding. Dry weather appears to have followed.

May 8.—During the past week a succession of showers, sufficient to moisten the earth—the annual "May rains;" none to come after. San Joaquin country flooded; unusual amount of rain on the mountains in winter.

May 22.—Several light showers during past week.

July 2.—A light but refreshing shower, barely sufficient to render the dust adhesive; a promise of more.

August 21.—Cold winds and heavy fogs throughout the week.

August 28.—A heavy shower of rain in evening, with thunder and lightning, extending some miles back.

September 18.—A week of hot and calm weather; 92° in shade.

September 25.—Sou'westers, sea fogs, etc.; "cool to overcoating" this week.

October 20.—A furious norther, lasting till evening.

October 30.—Weather dubious, inclining to "heavy wet."

November 6.—Winter fairly closed in. The past week cold and disagreeable, with drenching rains and cold winds. For a few days no locomotion allowed.

1848.

February 26.—Rain fell abundantly the past week, and snow on the mountains.

March 18.—Heavy rains during the week. Several weeks preceding the weather was delightful; 63°.

April 1.—Rains have been abundant.

1849.

[San Francisco Whig of September 3, 1852.]

September 19.—Thunderstorm on Mokelumne River.

[From the Alta-California, April 17, 1850.]

The first southeast blow was on November 13 and the last in March; 7 southeast blows in that period, and seventy-one days rain in those one hundred and thirty-nine days. Mean barometer 29.12; temperature 57°.

1850.

[From the San Francisco Herald.]

September 10.—Heavy rain above Marysville.

September 11.—Shower at Marysville.

September 12.—First rain of season; light shower at 6 a. m. at San Francisco.

September 15.—Gentle rain most of day at San Francisco.

September 20.—Shower last night.

September 20 and 22.—Rain on Tuolumne; great flood.

September 21.—Moist and hazy. Much rain during day.

September 22.—Bright and warm.

September 23.—Rain at 2 p. m. and all the evening.

October.—No rain noted during month.

November 19.—Rain at times; began in morning; slight showers frequent through the day and night. Severe gale from southeast in p. m.; blew down Presbyterian church on Stockton street and damaged shipping.

November 22.—Rain storm. Price of carting raised from $1 and $1.50 to $2 and $2.50 from mud.

November 23.—Calaboose inundated 1 foot during night.

The tables of monthly and seasonal rainfalls for San Francisco are given on page 9.

TOTAL NUMBER OF DAYS ON WHICH PRECIPITATION HAS FALLEN FROM MARCH 1, 1871, TO MARCH 1, 1901.

Month.	Less than 0.01.	0.01–0.10.	0.11–0.25.	0.26–0.50.	0.51–1.00.	Over 1.00.
January	43	113	65	56	61	37
February	27	125	56	54	48	19
March	45	129	63	50	45	17
April	50	101	44	34	16	16
May	52	74	24	10	12	8
June	34	46	6	5	3	0
July	15	16	1	0	0	0
August	22	13	0	0	0	0
September	27	32	11	7	5	0
October	25	62	22	18	17	12
November	31	77	47	35	22	25
December	31	77	58	74	49	38

NUMBER OF HIGH WINDS, SEPTEMBER, 1881, TO DECEMBER 31, 1900.[a]

Month.	Velocity.			Month.	Velocity.		
	30 to 35.	36 to 40.	Over 40.		30 to 35.	36 to 40.	Over 40.
January	20	16	8	July	188	56	2
February	21	7	1	August	157	35	2
March	41	11	2	September	107	7	1
April	82	14	2	October	35	.....	1
May	121	15	2	November	11	.....	6
June	196	35	8	December	24	7	4

[a] All wind velocities are given in miles per hour.

Record commencing September 1, 1881.

HIGHEST WIND VELOCITY, DIRECTION, AND DATE FOR EACH MONTH TO DECEMBER 31, 1900.

Month.	Velocity.	Direction.	Date.	Month.	Velocity.	Direction.	Date.
January	48	SW.	26, 1875	July	41	W.	[b] 15, 1898
February	48	SW.	[a] 22, 1891	August	42	SW.	2, 1893
March	44	N.	8, 1880	September	40	W.	27, 1899
April	47	NW.	28, 1871	October	41	W.	10, 1899
May	45	W.	11, 1897	November	56	SE.	30, 1892
June	48	SW.	30, 1873	December	60	SE.	28, 1892

[a] Cups blew off before maximum was reached. [b] Also other dates.

AVERAGE VELOCITY OF AFTERNOON WINDS.

Month.	2 to 3.	3 to 4.	4 to 5.	Month.	2 to 3.	3 to 4.	4 to 5.
January	8.8	8.6	8.0	July	21.0	21.6	22.0
February	10.5	10.8	10.8	August	20.2	20.9	20.8
March	13.4	14.1	14.1	September	17.7	18.5	18.4
April	16.7	17.8	16.9	October	13.4	14.0	14.1
May	18.0	18.5	18.1	November	9.2	9.4	9.6
June	20.8	21.3	21.0	December	8.4	8.1	7.7

GREATEST PRECIPITATION (INCHES AND HUNDREDTHS) IN TWENTY-FOUR HOURS FOR EACH MONTH.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Greatest annual.
1871	.....	.....	0.57	1.28	0.13	0.01	0.00	0.02	0.00	0.07	1.24	3.14	3.14
1872	2.36	1.28	0.73	0.35	0.15	0.03	0.01	0.00	0.04	0.11	2.06	2.33	2.36
1873	1.02	0.82	0.54	0.36	0.00	0.01	0.01	0.05	0.00	0.77	0.80	2.33	2.33
1874	1.61	0.81	0.65	0.70	0.23	0.13	0.00	0.00	0.02	1.58	3.98	0.15	3.98
1875	2.19	0.27	0.45	0.06	0.14	0.90	0.00	0.00	0.00	0.22	2.37	1.50	2.37
1876	1.76	1.80	1.59	0.60	0.24	0.04	0.01	0.01	0.20	1.39	0.19	0.00	1.80
1877	1.63	0.52	0.56	0.08	0.18	0.01	0.02	0.00	0.00	0.36	0.56	1.11	1.63
1878	1.98	1.92	1.01	0.61	0.14	0.01	0.01	T.	0.45	1.27	0.45	0.33	1.98
1879	1.04	1.66	3.31	0.72	0.98	0.05	0.01	0.02	T.	0.56	1.38	1.55	3.31
1880	1.03	0.64	0.57	2.21	0.84	0.00	0.00	0.00	0.00	0.05	0.32	2.36	2.36
1881	4.67	1.37	0.69	1.09	0.17	0.41	0.00	0.00	0.25	0.21	1.34	1.35	4.67
1882	0.57	0.82	0.86	0.44	0.15	0.02	0.00	0.00	0.26	1.40	2.41	0.76	2.41
1883	1.30	0.71	1.63	0.76	1.23	0.01	0.00	0.00	0.42	1.19	1.01	0.28	1.63
1884	1.44	1.52	2.21	1.66	0.12	1.23	0.00	0.03	0.21	1.15	0.19	2.07	2.21
1885	0.97	0.15	0.55	2.03	0.04	0.10	0.05	T.	0.11	0.70	2.58	2.78	2.78
1886	2.40	0.18	0.65	1.36	0.21	0.01	0.23	0.00	0.01	0.72	0.77	1.10	2.40
1887	0.80	3.60	0.52	1.45	0.03	0.07	T.	0.01	0.18	0.00	0.48	1.14	3.60
1888	1.58	0.38	1.34	0.11	0.19	0.10	0.01	0.01	0.92	0.05	1.68	1.51	1.68
1889	0.81	0.59	3.08	0.30	1.29	0.03	0.01	T.	T.	2.03	0.92	1.46	3.08
1890	2.08	1.63	1.86	0.55	0.53	0.05	0.02	0.00	0.31	0.00	0.00	1.90	2.08
1891	0.75	3.38	0.68	1.20	0.61	0.10	0.09	0.02	0.63	0.03	0.26	2.21	3.38
1892	1.06	1.03	0.90	0.38	1.15	T.	0.00	0.00	0.02	0.91	1.46	2.34	2.34
1893	1.39	1.06	0.98	0.71	0.14	0.03	0.02	0.00	0.12	0.10	1.69	0.97	1.69
1894	2.61	1.05	0.34	0.30	0.68	0.22	T.	0.00	1.04	0.64	0.88	1.64	2.61
1895	1.96	1.44	0.67	0.89	0.27	0.00	0.01	0.00	0.62	0.06	1.06	0.51	1.96
1896	1.85	0.18	0.84	2.43	0.84	0.00	0.04	0.06	0.41	1.46	2.79	1.65	2.79
1897	1.08	1.23	1.42	0.20	0.61	0.19	T.	T.	0.08	1.41	0.42	1.02	1.42
1898	0.33	0.78	0.13	0.19	1.23	0.18	0.00	T.	0.73	0.45	0.36	0.70	1.23
1899	0.98	0.08	2.15	0.45	0.77	0.01	0.00	T.	0.00	1.94	1.51	1.17	2.15
1900	1.92	0.50	0.90	0.86	0.22	0.04	T.	T.	0.45	0.34	1.66	0.74	1.92
1901	1.75	1.95	0.67	0.88	0.46	T.	.....	.....	.....	.....	.....	.....	.....
Greatest	4.67	3.60	3.31	2.43	1.29	1.23	0.23	0.06	1.04	2.03	3.98	3.14	.....
date.	29, 1881	4–5, 1887	4–5, 1879	23–24, 1896	4–5, 1889	11–12, 1884	16, 1886	29–30, 1896	29–30, 1894	17–18, 1889	23, 1874	18–19, 1871	.....

DATES WHEN PRECIPITATION EQUALED OR EXCEEDED 2.50 INCHES IN ANY CONSECUTIVE TWENTY-FOUR HOURS.

	Inches.
December 17 and 18, 1871, from 11.43 p. m. 17th to 11.43 p. m. 18th	2.83
December 18 and 19, 1871, from 11.43 p. m. 18th to 11.43 p. m. 19th	3.12
November 22 and 23, 1874, from 11.08 p. m. 22d to 11.08 p. m. 23d	3.98
March 4 and 5, 1879, from 4.43 p. m. 4th to 4.43 p. m. 5th	3.31
January 28 and 29, 1881, from 11.08 p. m. 28th to 11.08 p. m. 29th	4.67
November 23 and 24, 1885, from 11 p. m. 23d to 11 p. m. 24th	2.58
December 21, 1885, from 1.35 a. m. 21st to 1.35 p. m. 21st	2.78
February 4 and 5, 1887, from 3 p. m. 4th to 3 p. m. 5th	3.60
March 12 and 13, 1889, from 8.15 a. m. 12th to 8 a. m. 13th	3.08
February 14 and 15, 1891, from 8.45 p. m. 14th to 8 p. m. 15th	3.38
January 19 and 20, 1894, from 8 p. m. 19th to 8 p. m. 20th	2.61
November 23 and 24, 1896, 6 a. m. 23d to 6 a. m. 24th	2.79

Maximum rates of rainfall January 1, 1893, to December 31, 1900: Five minutes, 0.16; 10 minutes, 0.19; 1 hour, 0.55. On February 22, 1901: Five minutes, 0.17; 10 minutes, 0.21. On October 23, 1902: Five minutes, 0.16; 10 minutes, 0.20. On February 7, 1903: Five minutes, 0.19; 10 minutes, 0.23.

GREATEST MONTHLY PRECIPITATION AND DATE.

Month.	Year.	Amount.	Month.	Year.	Amount.
January	1862	24.36	July	1886	0.23
February	1878	12.52	August	1864	0.21
March	1879	8.75	September	1898	1.06
April	1880	10.06	October	1889	7.28
May	1883	3.52	November	1885	11.78
June	1884	2.57	December	1866	15.16

Least Monthly Precipitation and Date.

Month.	Year.	Amount.	Month.	Year.	Amount.
January	1852	0.58	July	(a)	0.00
February	1864	0.00	August	(a)	0.00
March	1898	0.24	September	(a)	0.00
April	1857	0.00	October	(a)	0.00
May	(a)	0.00	November	1890	0.00
June	(a)	0.00	December	1876	0.00

a Many years.

Number of Times Monthly Precipitation has Exceeded the Normal for Fifty Years.

Month.	Total.	First 25 years.	Second 25 years.	Month.	Total.	First 25 years.	Second 25 years.
January	19	9	10	July	6	2	4
February	22	13	9	August	7	5	2
March	20	10	10	September	18	4	14
April	18	9	9	October	16	5	11
May	18	8	10	November	23	15	8
June	9	1	8	December	20	13	7

Average Hourly Wind Velocity (miles per hour).

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1 a. m	6.1	6.1	6.7	7.3	7.9	9.3	9.2	8.9	6.8	5.3	5.2	6.1
2 a. m	6.2	5.9	6.3	7.0	7.6	8.8	8.8	8.5	6.4	5.0	5.1	6.2
3 a. m	6.3	5.8	6.3	6.6	7.2	8.2	8.2	7.9	6.0	4.9	5.2	6.2
4 a. m	6.3	5.9	6.2	6.3	6.8	7.6	7.8	7.6	5.9	4.8	5.1	6.3
5 a. m	6.4	6.1	6.3	6.1	6.6	7.1	7.4	7.3	5.6	4.8	5.2	6.4
6 a. m	6.5	5.9	6.1	6.0	6.4	6.9	7.4	6.9	5.4	4.7	5.3	6.5
7 a. m	6.4	5.8	6.1	6.2	6.7	7.1	7.4	6.8	5.4	4.7	5.1	6.6
8 a. m	6.5	6.2	6.6	7.0	7.5	8.1	8.0	7.4	5.8	5.0	5.5	6.8
9 a. m	7.0	6.9	7.3	7.8	8.3	8.8	8.6	7.8	6.4	5.6	6.1	7.1
10 a. m	7.6	7.6	8.0	8.6	9.3	10.3	9.9	8.9	7.0	6.2	6.6	7.7
11 a. m	7.9	7.6	8.4	9.7	11.0	12.4	11.8	11.1	8.3	6.7	6.7	7.8
12 noon	8.2	7.8	9.2	11.6	13.3	15.2	14.7	13.3	10.7	8.1	6.8	7.9
1 p. m	8.4	8.6	10.6	13.9	15.4	17.8	17.4	16.0	13.3	9.9	7.4	8.2
2 p. m	8.7	9.6	12.2	15.6	17.0	19.8	19.7	18.5	15.7	11.8	8.6	8.5
3 p. m	8.8	10.5	13.4	16.7	18.0	20.8	21.0	20.2	17.7	13.4	9.2	8.4
4 p. m	8.6	10.8	14.1	17.3	18.5	21.3	21.6	20.9	18.5	14.0	9.4	8.1
5 p. m	8.0	10.8	14.1	16.9	18.1	21.0	22.0	20.8	18.4	14.1	9.6	7.7
6 p. m	7.6	9.8	13.1	15.9	17.1	20.1	20.7	19.9	17.0	13.2	8.8	7.6
7 p. m	7.3	9.0	11.6	14.3	15.2	18.2	18.7	17.5	14.8	11.0	7.7	7.0
8 p. m	6.8	8.3	9.9	12.3	13.1	16.1	16.2	15.2	12.0	9.0	6.7	6.7
9 p. m	6.5	7.4	8.6	10.6	11.3	13.5	14.0	13.3	10.0	7.7	6.1	6.6
10 p. m	6.1	7.0	7.8	9.5	10.0	11.8	12.3	11.3	9.0	6.6	5.6	6.4
11 p. m	5.9	6.4	7.2	8.6	9.0	10.8	10.8	10.2	8.2	6.0	5.2	6.2
12 midnight	6.0	6.1	6.8	7.8	8.3	10.1	10.0	9.4	7.4	5.6	5.1	6.0
Average	7.0	7.6	8.8	10.4	11.3	13.0	13.1	12.3	10.1	7.8	6.6	7.0

MONTHLY RELATIVE HUMIDITY (PER CENT).

Month.	A. M.	P. M.	Average.	Month.	A. M.	P. M.	Average.
January	83	75	79	July	89	80	84
February	83	73	78	August	90	82	86
March	82	73	78	September	88	78	83
April	83	74	78	October	85	74	80
May	84	74	79	November	82	71	76
June	86	75	80	December	84	76	80

DATES OF SNOWFALL IN SAN FRANCISCO SINCE MARCH 1, 1871.

January 21, 1876.—Light snow fell for ten minutes.

December 31, 1882.—Heavy snow fell from 11.30 a. m. to 4.20 p. m.; amount, 3.5 inches.

February 6, 1883.—A few flakes of snow fell during the day.

February 7, 1884.—Snow fell at intervals during the day, depth varying from 1 to 2 inches.

February 5, 1887.—Snow fell during the day; depth at office, 3.7 inches, while in the western portion of the city it was fully 7 inches deep.

January 4, 1888.—A few flakes of snow fell during the day.

January 16, 1888.—Light snow fell to the depth of 0.1 inch.

March 2, 1894.—A few flakes of snow fell during the day.

March 2, 1896.—Snow mixed with rain fell at intervals during the day.

March 3, 1896.—Heavy snow fell during the night; depth at office at 8 a. m., 1 inch.

February 3, 1903.—Snow and rain, large flakes, 11.16 to 11.20 a. m.

THE GREAT RAINSTORM OF 1866.

Mr. L. J. Le Conte, C. E., of Oakland, has kindly furnished the following relative to the great rainstorm in this city on the 19th and 20th of December, 1866:

Our profession is interested in maximum rainfall in twenty-four hours. I inclose a copy of the record of the memorable rainfall of December 19 and 20, 1866, which is given in hourly subdivisions. The monthly rainfall was also the maximum on record—15.16 inches—while at Sacramento the record was 12.90 inches. I think this was published in full in the Evening Bulletin in December, 1885.

Following is the record referred to:

	Inches.
December 19—11.45 a. m. to 4.45 p. m	1.97
December 19—4.45 p. m. to 7.45 p. m	2.27
December 19—7.45 p. m. to 9.50 p. m	0.85
December 19—9.50 p. m. to 1 a. m	1.20
December 20— 1 a. m. to 8.15 a. m	1.47
Total in 21 hours	7.76

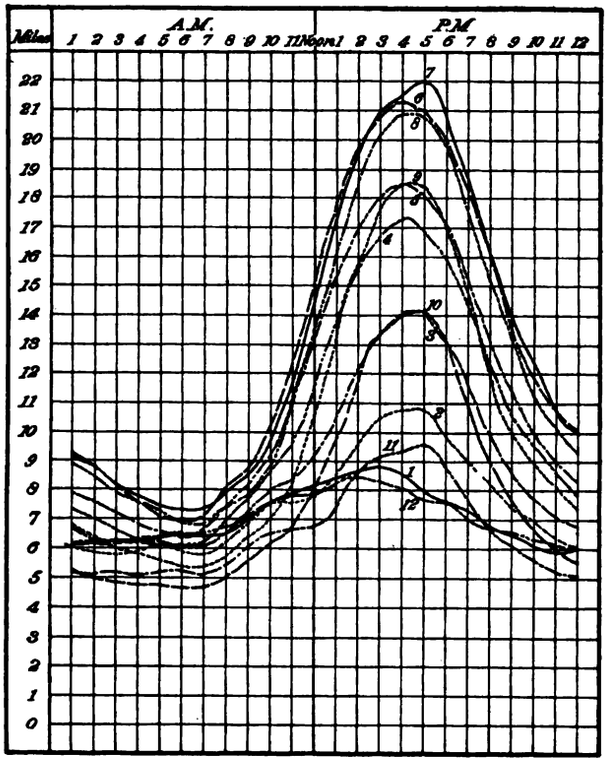

FIG. 6.—Monthly curves of hourly wind velocities.

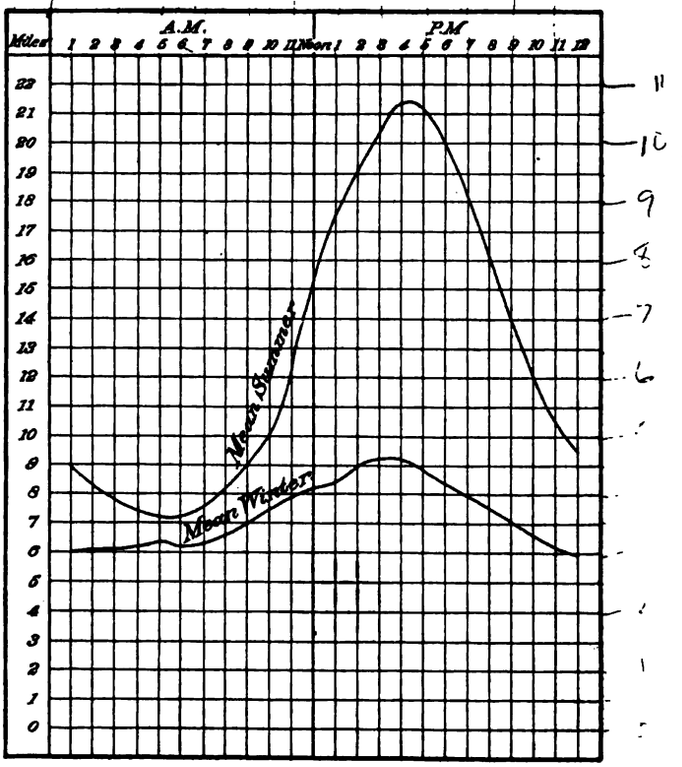

FIG. 7.—Hourly wind velocities at San Francisco.

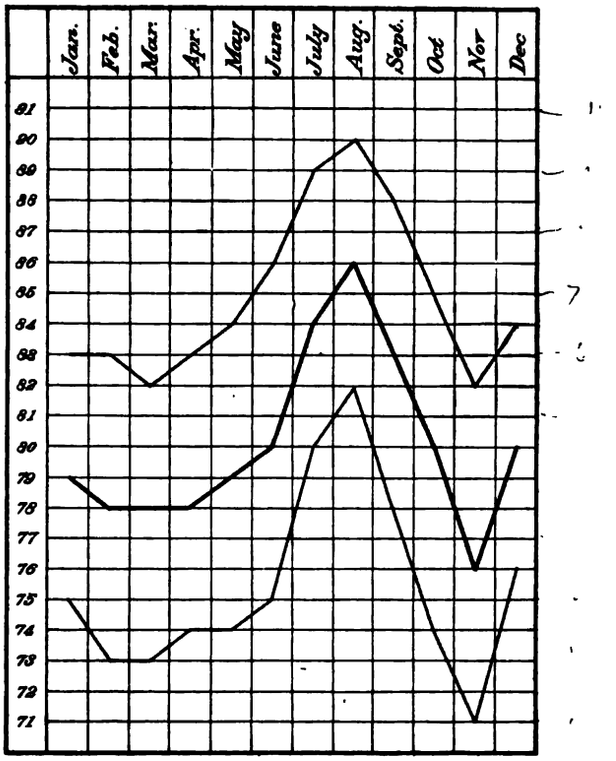

FIG. 8.—Mean relative humidity—upper, 5 a. m.; lower, 5 p. m.

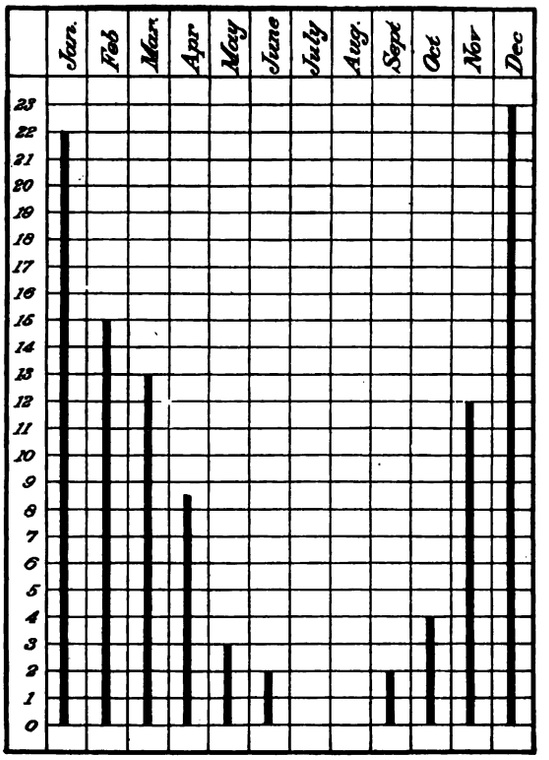

FIG. 9.—Percentage annual rainfall each month.—From Bulletin D, by A. J. Henry.

Rainfall (Inches and Hundredths) as Measured by John Pettee, January 1, 1865, to March 19, 1902.

[In this record the day commences at about 7 a. m. on the date mentioned and ends on the succeeding day at about 7 a. m.]

Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.
Rain year 1864–65.a		*Rain year 1864–65.*		*Rain year 1866–67.*		*Rain year 1866–67.*		*Rain year 1867–68.*	
1865.		1866.		1866.		1867.		1868.	
January 1	0.04	January 5	0.32	November 2	0.28	February 27	1.02	January 13	0.05
January 5	0.08	January 6	0.24	November 3	0.05	February 28	0.60	January 17	0.53
January 18	0.02	January 7	1.32	November 4	0.35	March 1	0.21	January 19	1.07
January 24	0.04	January 8	0.58	November 6	0.01	March 8	0.42	January 20	0.04
January 25	0.88	January 10	1.08	November 7	0.11	March 16	0.02	January 21	0.50
January 26	0.22	January 11	0.59	November 16	0.31	March 17	0.09	January 22	1.00
January 27	1.07	January 12	0.05	November 19	0.06	March 20	0.06	January 23	0.81
January 28	0.37	January 13	0.80	November 23	0.16	March 21	0.26	January 24	0.82
January 30	0.10	January 16	1.35	November 24	0.53	March 31	0.92	January 25	0.77
January 31	1.41	January 17	0.74	November 25	0.43	April 4	0.22	January 26	0.87
February 1	0.01	January 18	0.01	November 29	0.60	April 5	0.26	February 7	0.08
February 11	0.02	January 19	0.35	November 30	0.17	April 9	0.04	February 19	0.24
February 13	0.35	January 20	3.08	December 1	0.70	April 10	0.70	February 20	0.54
February 14	0.07	January 21	0.52	December 2	0.13	April 11	0.53	February 21	0.38
February 15	0.05	January 22	0.06	December 8	0.12	April 12	0.01	February 22	0.11
February 16	0.11	January 23	0.12	December 10	0.13	May 17	0.04	February 23	0.02
February 17	0.04	January 24	0.13	December 11	0.59	May 24	0.61	February 24	1.43
February 18	0.53	January 31	0.27	December 12	0.01	Total	35.94	February 25	0.31
February 19	0.08	February 1	0.05	December 14	0.02			February 26	2.41
February 21	0.03	February 2	0.55	December 15	1.03	*Rain year 1867–68.*		February 27	0.21
February 27	0.04	February 3	0.14	December 16	0.10			February 28	0.18
February 28	0.04	February 5	0.13	December 17	0.16	1867.		February 29	0.38
March 1	0.26	February 9	0.06	December 18	2.41	September 14	0.06	March 1	0.09
March 3	0.34	February 10	0.01	December 19	0.14	October 5	0.56	March 2	0.11
March 4	0.05	February 12	0.04	December 20	7.67	November 5	0.44	March 3	1.39
March 11	0.04	February 26	0.06	December 21	0.67	November 6	0.50	March 4	0.17
March 12	0.03	February 27	0.04	December 23	0.13	November 18	0.28	March 11	0.22
March 19	0.11	February 28	0.31	December 24	0.08	November 19	0.61	March 12	0.04
April 6	0.22	March 1	0.02	December 25	0.04	November 20	0.01	March 13	0.67
April 7	0.49	March 4	0.04	December 26	0.78	November 21	0.73	March 14	0.11
April 8	0.09	March 5	0.10	December 27	0.10	November 23	0.37	March 15	0.22
April 27	0.01	March 6	0.46	December 28	0.41	November 24	0.17	March 20	0.07
May 17	0.29	March 7	0.35	December 29	0.28	November 25	0.03	March 21	0.93
May 18	0.33	March 8	0.04	December 30	0.20	November 30	0.02	March 22	1.02
July 16	0.01	March 17	0.01			December 1	0.17	April 1	0.02
September 24	0.10	March 18	0.67	1867.		December 7	0.30	April 2	0.08
September 26	0.13	March 19	0.01	January 2	0.01	December 8	0.63	April 3	0.12
October 7	0.03	March 20	0.22	January 4	0.39	December 9	0.36	April 6	0.14
October 8	0.11	March 21	0.01	January 5	0.64	December 12	0.02	April 9	0.45
October 24	0.03	March 22	0.02	January 10	0.02	December 15	0.10	April 10	0.21
October 29	0.17	March 23	0.01	January 11	0.24	December 16	0.54	April 11	0.86
October 30	0.01	March 24	0.08	January 12	0.75	December 17	1.75	April 13	0.10
November 13	0.95	March 25	0.12	January 14	0.04	December 18	0.73	April 14	0.01
November 14	0.03	March 29	0.07	January 18	0.08	December 20	0.80	April 29	0.14
November 16	0.83	March 30	0.10	January 19	0.34	December 21	1.21	April 30	0.03
November 17	0.09	March 31	0.44	January 20	0.46	December 22	2.03	May 12	0.02
November 18	0.15	April 14	0.03	January 21	1.14	December 23	0.72	May 13	0.02
November 19	0.07	April 18	0.01	January 22	0.34	December 24	0.83	May 18	0.01
November 20	0.74	April 29	0.15	January 23	0.70	December 25	0.63	June 12	0.01
November 21	0.19	April 30	0.02	January 24	0.04	December 29	0.11	June 22	0.10
November 22	1.07	May 12	0.01	January 25	0.17	December 30	0.68	June 23	0.06
November 30	0.47	May 17	0.01	January 26	1.03	December 31	2.40	Total	40.62
December 1	0.02	May 21	0.19	January 29	0.26				
December 7	0.05	May 22	0.10	February 2	0.02	1868.		*Rain year 1868–69.*	
December 9	0.01	May 25	0.95	February 9	0.01	January 1	0.47		
December 13	0.01	May 26	0.10	February 18	0.56	January 2	0.05		
December 21	0.04	May 27	0.81	February 19	0.65	January 3	0.14	1868.	
December 23	0.30	June 8	0.13	February 20	1.74	January 4	0.13	September 30	0.12
December 24	0.09	June 21	0.01	February 21	1.76	January 8	0.58	October 1	0.08
December 25	0.08	Total	23.57	February 25	0.14	January 11	0.90	October 2	0.02
December 26	0.01			February 26	0.04	January 12	0.49	October 22	0.02

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RAINFALL (INCHES AND HUNDREDTHS) AS MEASURED BY JOHN PETTEE, JANUARY 1, 1865, TO MARCH 19, 1902—Cont'd.

Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.
Rain year 1868–69.		*Rain year 1869–70.*		*Rain year 1870–71.*		*Rain year 1871–72.*		*Rain year 1871–72.*	
1868.		1869.		1870.		1871.		1872.	
November 4	0.06	July 10	0.07	September 29	0.04	August 5	0.02	February 27	0.73
November 18	0.64	September 2	0.09	September 30	0.02	September 16	0.04	February 29	0.15
November 19	0.39	October 18	0.05	November 4	0.02	October 27	0.13	March 4	0.49
November 24	0.19	October 19	0.64	November 6	0.20	November 3	0.09	March 5	0.09
November 29	0.07	October 20	1.07	November 7	0.12	November 12	0.02	March 8	0.35
December 17	0.50	October 21	0.58	November 8	0.01	November 14	0.15	March 10	0.25
December 19	0.01	November 5	0.15	November 9	0.03	November 15	0.08	March 11	0.17
December 21	0.11	November 10	0.81	November 26	0.03	November 24	0.29	March 22	0.01
December 22	0.14	November 11	0.15	November 29	0.08	November 25	0.06	March 26	0.08
December 23	1.32	November 12	0.04	December 1	0.63	November 26	0.81	March 30	0.09
December 24	0.12	November 27	0.09	December 2	0.40	November 27	0.11	April 12	0.13
December 25	0.62	December 7	1.23	December 5	1.28	November 28	0.66	April 14	0.35
December 26	0.61	December 8	0.44	December 6	0.31	December 1	0.11	April 15	0.36
December 29	0.15	December 10	0.30	December 7	0.04	December 2	0.01	April 16	0.20
December 30	0.45	December 22	0.38	December 8	0.01	December 17	1.50	April 26	0.18
December 31	0.37	December 23	0.61	December 13	0.17	December 18	2.54	May 31	0.11
1869.		December 24	1.35	December 14	0.20	December 19	1.28	June 4	0.01
January 1	0.86	December 25	0.19			December 20	1.22	Total	28.91
January 2	0.20	1870.		1871.		December 21	0.10		
January 3	0.01	January 10	0.20			December 22	1.57	*Rain year 1872–73.*	
January 7	0.09	January 12	0.21	January 9	0.48	December 23	1.36		
January 10	0.01	January 13	0.59	January 10	0.14	December 24	0.03	1872.	
January 11	0.05	January 14	1.13	January 17	0.54	December 26	0.20		
January 13	0.11	January 15	0.03	January 18	0.15	December 27	0.65	September 25	0.04
January 22	0.25	January 17	0.03	January 22	0.39	December 28	0.16	October 25	0.05
January 23	1.50	January 18	0.88	January 23	0.24	December 29	0.62	October 26	0.04
January 25	0.33	January 19	0.13	January 27	0.31	December 30	0.16	November 3	0.20
January 26	0.30	January 20	0.32	January 28	0.09	December 31	1.17	November 4	0.02
January 27	0.02	January 21	0.15	February 3	0.01			November 8	0.01
January 28	0.62	January 22	0.07	February 4	0.39	1872.		November 11	0.49
January 29	1.08	January 23	0.02	February 6	0.03	January 2	0.56	November 12	0.01
January 30	0.04	February 9	0.46	February 7	0.01	January 3	0.02	November 28	0.62
February 2	0.63	February 11	0.16	February 13	0.30	January 5	0.20	November 29	1.60
February 3	0.09	February 12	0.02	February 14	0.30	January 6	0.09	December 4	0.04
February 7	0.85	February 14	0.11	February 15	0.34	January 7	1.34	December 22	0.75
February 9	1.82	February 15	0.21	February 20	0.86	January 8	1.30	December 23	0.46
February 10	0.08	February 17	0.02	February 21	1.08	January 10	0.07	December 24	2.31
February 11	0.12	February 19	0.44	February 22	0.01	January 11	0.01	December 25	1.17
March 12	0.07	February 20	0.40	February 23	0.22	January 12	0.01	December 26	0.36
March 13	0.14	February 21	0.23	March 5	0.04	January 13	0.01	December 27	0.94
March 14	0.30	February 22	2.27	March 6	0.22	January 30	0.04	December 28	1.62
March 15	0.05	February 23	0.02	March 12	0.14	January 31	0.01	December 30	0.13
March 16	0.59	February 24	0.11	March 14	0.04	February 1	0.01	1873.	
March 17	0.57	February 28	0.08	March 16	0.15	February 2	0.04	January 1	0.17
March 18	0.08	March 1	0.03	March 18	0.07	February 3	0.12	January 2	0.26
March 19	0.27	March 10	0.06	March 19	0.13	February 4	0.01	January 4	0.12
March 20	0.69	March 11	0.36	March 22	0.19	February 7	0.80	January 5	0.01
March 24	0.03	March 12	0.11	March 23	0.25	February 8	1.15	January 10	0.11
March 25	0.19	March 16	0.94	March 24	0.03	February 10	0.49	January 11	0.06
March 29	0.28	March 17	0.01	April 3	0.06	February 11	0.01	January 12	0.07
April 7	0.31	March 22	0.30	April 4	0.68	February 13	0.14	January 29	0.20
April 16	0.81	March 29	0.03	April 5	0.81	February 14	0.01	January 30	0.30
April 17	0.67	April 2	0.25	April 7	0.01	February 15	0.24	January 31	1.31
April 19	0.12	April 3	0.44	April 16	0.49	February 16	0.31	February 1	0.33
May 17	0.03	April 4	0.01	May 4	0.01	February 17	0.10	February 2	0.22
May 19	0.15	April 7	0.09	May 7	0.01	February 18	0.08	February 3	0.22
May 22	0.07	April 11	0.70	May 15	0.06	February 21	0.95	February 4	0.06
May 23	0.03	May 3	0.14	May 26	0.04	February 23	1.30	February 5	0.02
June 14	0.06	May 18	0.09	May 28	0.19	February 24	0.35	February 8	1.07
Total	20.56	May 19	0.13	Total	13.10	February 25	0.19	February 9	0.02
		Total	20.22			February 26	0.07	February 10	0.32

RAINFALL (INCHES AND HUNDREDTHS) AS MEASURED BY JOHN PETTEE, JANUARY 1, 1865, TO MARCH 19, 1902—Cont'd.

Date.	Amount.
Rain year 1872-73.	
1873.	
February 12	0.23
February 14	0.01
February 15	0.28
February 16	0.05
February 17	1.01
February 18	0.03
February 23	0.14
February 25	0.01
February 26	0.68
February 27	0.04
February 28	0.05
March 5	0.48
March 6	0.10
March 15	0.25
March 30	0.02
April 2	0.12
April 20	0.30
April 27	0.01
Total	19.54
Rain year 1873-74.	
1873.	
July 14	0.02
July 22	0.01
August 4	0.02
October 6	0.14
October 7	0.36
October 8	0.06
November 5	0.35
November 12	0.01
November 13	0.07
November 29	0.77
November 30	0.05
December 3	1.93
December 4	1.09
December 5	0.16
December 6	0.50
December 7	0.14
December 8	0.65
December 9	0.35
December 13	0.30
December 14	0.18
December 15	0.43
December 16	0.11
December 18	0.01
December 19	0.42
December 21	0.37
December 27	0.22
December 28	0.63
December 29	1.44
December 30	0.49
December 31	0.17
1874.	
January 1	1.52
January 2	0.01
January 14	0.05
January 15	0.68
January 16	0.49
January 17	0.14
January 18	0.25
January 19	0.59
January 20	0.04
January 21	0.14
January 25	0.36
January 26	0.09
January 27	0.22
January 28	0.44
January 30	0.31
February 2	0.29
February 6	0.02
February 8	0.08
February 9	0.01
February 10	0.10
February 11	0.26
February 12	0.19
February 13	0.82
February 16	0.17
February 17	0.14
February 28	0.41
March 1	0.33
March 2	0.21
March 3	0.08
March 4	0.06
March 5	0.16
March 6	0.01
March 7	0.35
March 10	0.22
March 11	0.75
March 12	0.06
March 13	0.02
March 14	0.64
March 15	0.13
March 25	0.19
March 27	0.34
March 28	0.01
April 2	0.04
April 3	0.01
April 4	0.12
April 5	0.02
April 9	0.06
April 10	0.01
April 11	0.58
April 12	0.05
April 29	0.02
April 30	0.33
May 4	0.03
May 5	0.25
May 6	0.64
May 22	0.05
May 23	0.03
June 6	0.06
June 20	0.01
June 21	0.01
Total	24.55
Rain year 1874-75.	
1874.	
September 3	0.05
September 30	0.05
October 1	0.02
October 8	0.15
October 15	0.03
October 18	0.13
October 21	0.36
October 22	0.03
October 24	0.59
October 25	1.26
October 26	0.17
October 27	0.01
November 3	0.02
November 4	0.43
November 5	0.98
November 7	0.14
November 9	0.02
November 10	0.02
November 12	0.01
November 17	0.02
November 21	0.10
November 22	1.18
November 23	2.43
November 24	0.01
November 30	0.05
December 2	0.09
December 14	0.02
December 23	0.04
December 25	0.11
1875.	
January 11	0.01
January 13	0.85
January 14	0.45
January 15	0.01
January 16	0.22
January 17	1.12
January 18	1.35
January 19	0.52
January 20	0.01
January 21	0.17
January 22	1.26
January 23	0.80
January 24	0.09
January 31	0.27
February 24	0.01
March 1	0.12
March 2	0.27
March 3	0.25
March 5	0.01
March 24	0.10
March 26	0.01
March 27	0.04
March 28	0.32
April 4	0.09
April 29	0.01
May 5	0.01
May 7	0.01
May 14	0.07
June 12	0.09
June 13	0.88
June 16	0.12
Total	18.15
Rain year 1875-76.	
1875.	
October 25	0.02
October 26	0.18
October 27	0.03
October 31	0.01
November 1	0.86
November 6	0.20
November 10	0.03
November 11	0.01
November 12	0.34
November 13	0.24
November 14	0.21
November 15	0.11
November 16	1.87
November 17	1.50
November 18	0.26
November 20	0.03
November 22	0.06
November 23	0.18
November 24	0.04
November 25	0.01
November 26	1.03
November 29	0.01
November 30	0.64
December 1	0.03
December 3	0.59
December 18	0.45
December 24	0.70
December 25	0.02
December 26	0.12
December 27	0.92
December 28	0.25
December 31	0.27
1876.	
January 2	1.40
January 3	0.55
January 4	0.09
January 6	0.95
January 7	0.65
January 19	0.36
January 20	0.17
January 21	0.26
January 22	0.72
January 23	1.37
January 24	0.16
January 25	0.03
January 26	0.42
January 27	0.02
January 30	0.01
February 4	0.02
February 7	1.12
February 8	0.73
February 9	0.05
February 10	0.62
February 11	0.52
February 24	0.31
February 25	0.03
February 26	0.55
February 27	0.36
March 1	0.40
March 2	0.94
March 3	0.61
March 5	0.46
March 6	1.09
March 7	0.38
March 8	0.26
March 11	0.05
March 12	0.27
March 28	0.15
March 29	0.06
April 3	0.25
April 6	0.54
April 8	0.03
April 9	0.10
April 17	0.07
April 21	0.06
April 28	0.06
May 19	0.26
May 23	0.01
June 19	0.04
Total	26.28
Rain year 1876-77.	
1876.	
July 6	0.02
August 14	0.01
September 4	0.19
September 29	0.11
October 8	0.02
October 15	0.45
October 16	0.78
October 25	0.07
October 26	0.17
October 27	1.21
October 28	0.22
November 8	0.08
November 16	0.22
1877.	
January 15	0.06
January 16	0.46
January 17	0.37
January 18	0.17
January 19	0.18
January 20	0.09
January 21	0.01
January 27	0.36
January 28	0.65
January 29	0.18
January 30	1.10
January 31	0.36
February 2	0.01
February 11	0.28
February 12	0.31
February 20	0.01
February 22	0.06
February 25	0.29
February 28	0.05
March 1	0.15
March 2	0.08
March 5	0.14
March 9	0.56
March 10	0.07
March 14	0.02
March 28	0.02
April 2	0.01
April 7	0.10
April 14	0.11

RAINFALL (INCHES AND HUNDREDTHS) AS MEASURED BY JOHN PETTEE, JANUARY 1, 1865, TO MARCH 19, 1902—Cont'd.

Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.
Rain year 1876–77.		*Rain year 1877–78.*		*Rain year 1878–79.*		*Rain year 1879–80.*		*Rain year 1879–80.*	
1877.		1878.		1879.		1879.		1880.	
April 15.....	0.04	February 15 ...	0.34	January 22	0.43	November 13 ..	0.49	April 21.....	0.36
April 18.....	0.02	February 16 ...	0.16	January 23	0.79	November 28 ..	0.55	April 22.....	0.04
May 28.....	0.13	February 17 ...	0.74	January 24	0.04	November 29 ..	0.66	May 4	0.15
June 27.....	0.01	February 18 ...	1.55	January 25	0.40	November 30 ..	0.63	May 8	0.01
Total	9.96	February 19 ...	0.05	January 26	0.01	December 1....	0.02	May 10	0.78
Rain year 1877–78.		February 20 ...	0.09	January 27	0.22	December 2....	0.64	May 11	0.11
		February 23 ...	0.98	January 29	0.02	December 4....	0.08	May 12	0.01
1877.		February 25 ...	0.19	February 8	0.82	December 5....	0.39	June 23.....	0.01
July 15	0.05	February 26 ...	0.86	February 9	0.75	December 7....	0.35	Total	23.62
October 20.....	0.25	February 27 ...	0.42	February 10 ...	0.06	December 9....	0.20	*Rain year 1880–81.*	
October 22.....	0.30	March 3	0.66	February 11 ...	1.32	December 18...	0.41		
October 24.....	0.01	March 4	0.01	February 12 ...	0.29	December 19...	0.77	1880.	
November 2 ...	0.07	March 5	0.26	February 13 ...	0.05	December 20...	0.18	October 7.....	0.06
November 4 ...	0.27	March 6	0.76	February 15 ...	0.49	December 21...	0.57	October 31.....	0.01
November 5 ...	0.16	March 7	0.05	February 16 ...	0.24	December 22...	0.02	November 22 ..	0.05
November 10 ..	0.56	March 9	0.05	February 17 ...	0.15	December 28...	0.22	November 23 ..	0.34
November 14 ..	0.11	March 12	0.16	March 1	0.11	1880.		December 1....	2.00
November 15 ..	0.15	March 13	0.72	March 3	0.01	January 1.....	0.02	December 2....	0.74
November 16 ..	0.02	March 14	0.01	March 4	3.55	January 2.....	0.05	December 3....	0.09
November 22 ..	0.14	March 17	0.07	March 5	1.55	January 7.....	0.28	December 4....	0.48
December 1....	0.22	March 20	0.54	March 6	0.71	January 8.....	0.33	December 5....	0.05
December 15...	0.08	March 24	0.51	March 7	0.30	January 9.....	0.58	December 8....	0.09
December 16...	1.05	March 26	0.51	March 8	0.88	January 24.....	0.15	December 9....	0.02
December 17...	0.06	March 27	0.01	March 18	0.21	January 25.....	0.46	December 13...	0.20
December 20...	0.31	March 29	0.22	March 19	0.51	January 27.....	0.09	December 14...	2.00
December 21...	0.02	April 2.....	0.04	March 21	0.31	February 8	0.07	December 16...	0.71
December 22...	0.41	April 3.....	0.01	March 22	0.02	February 9....	0.27	December 18...	1.03
December 23...	0.01	April 14.....	0.48	March 24	0.01	February 10 ...	0.17	December 19...	1.06
December 28...	0.25	April 15.....	0.21	March 25	0.02	February 15 ...	0.14	December 20...	0.19
1878.		April 18.....	0.58	March 26	0.06	February 18 ...	0.75	December 22...	0.32
January 5.....	0.02	April 19.....	0.01	April 3.....	0.14	February 19 ...	0.07	December 23...	0.85
January 6.....	0.15	April 20.....	0.01	April 4.....	0.08	February 21 ...	0.23	December 24...	0.65
January 7.....	0.63	May 19.....	0.05	April 6.....	0.60	February 22 ...	0.17	December 25...	0.08
January 8.....	0.01	May 20.....	0.10	April 7.....	0.05	February 23 ...	0.01	December 26...	0.35
January 9.....	0.32	May 29.....	0.02	April 10.....	0.22	February 24 ...	0.08	December 27...	0.05
January 13.....	0.45	May 31.....	0.01	April 12.....	0.01	March 1	0.07	December 28...	0.14
January 14.....	1.24	Total	32.81	April 13.....	0.21	March 2	0.45	December 29...	0.01
January 15.....	1.09	*Rain year 1878–79.*		April 18.....	0.11	March 3	0.11	1881.	
January 16.....	1.27			April 19.....	0.54	March 16	0.19	January 12.....	0.67
January 17.....	0.01	1878.		May 6	0.08	March 17	0.08	January 13.....	0.03
January 18.....	0.30	July 9	0.01	May 13	0.03	March 23	0.02	January 14.....	0.78
January 21.....	0.34	July 16	0.03	May 17	0.79	March 24	0.26	January 15.....	0.31
January 22.....	0.78	September 16..	0.02	May 18	0.32	March 25	0.08	January 19.....	0.08
January 23.....	0.27	September 26..	0.01	May 19	0.25	March 26	0.02	January 25.....	0.02
January 24.....	1.21	September 28..	0.07	May 27	0.30	March 27	0.41	January 27.....	0.42
January 26.....	0.13	September 29..	0.36	June 9.....	0.04	March 28	0.02	January 28.....	3.06
January 27.....	1.41	October 13.....	0.21	Total	22.17	March 31	0.16	January 29.....	1.93
January 29.....	0.67	October 14.....	0.84	*Rain year 1879–80.*		April 1.....	1.08	January 30.....	0.28
January 30.....	0.41	November 4	0.08			April 2.....	0.33	February 1	0.01
January 31.....	0.37	November 14 ..	0.46	1879.		April 3.....	0.04	February 2	0.39
February 3	0.04	December 5....	0.15	July 7	0.01	April 4.....	0.04	February 3	0.49
February 4	0.65	December 6....	0.02	September 23..	0.01	April 5.....	0.61	February 4	0.19
February 5	0.40	December 8....	0.03	October 6.....	0.40	April 8.....	0.21	February 6	0.01
February 6	0.51	December 9....	0.08	October 11.....	0.30	April 9.....	0.57	February 7	0.37
February 7	0.24	December 30...	0.29	November 4	0.03	April 12.....	0.18	February 8	0.04
February 8	0.02	December 31...	0.07	November 5	0.15	April 13.....	0.38	February 9	0.01
February 10 ...	0.65	1879.		November 7	0.08	April 14.....	0.82	February 12 ...	0.36
February 11 ...	1.02	January 8	0.14	November 8	0.69	April 15.....	0.75	February 13 ...	0.10
February 12 ...	0.56	January 11	0.76	November 9	0.10	April 16.....	0.13	February 15 ...	1.13
February 13 ...	0.59	January 13	0.40	November 11 ..	0.23	April 17.....	0.13	February 16 ...	0.04
February 14 ...	1.11	January 17	0.04	November 12 ..	0.05	April 19.....	1.37	February 24 ...	0.10
						April 20.....	1.59		

RAINFALL (INCHES AND HUNDREDTHS) AS MEASURED BY JOHN PETTEE, JANUARY 1, 1865, TO MARCH 19, 1902—Cont'd.

Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.
Rain year 1880–81.		*Rain year 1881–82.*		*Rain year 1882–83.*		*Rain year 1883–84.*		*Rain year 1883–84.*	
1881.		1882.		1882.		1883.		1884.	
February 25	0.87	January 23	0.41	November 7	0.13	October 25	0.02	April 10	0.33
February 26	0.07	January 25	0.39	November 8	0.01	October 26	1.05	April 11	1.41
February 28	0.03	January 26	0.05	November 22	0.22	October 27	0.06	April 12	0.04
March 8	0.68	January 30	0.24	November 25	0.02	November 6	0.17	April 13	0.07
March 9	0.08	January 31	0.02	November 26	0.03	November 7	0.45	April 14	1.33
March 11	0.01	February 9	0.50	November 29	0.01	November 8	0.26	April 15	0.01
March 15	0.10	February 10	0.22	December 10	0.02	November 24	0.22	April 23	0.12
March 23	0.03	February 11	0.01	December 11	0.08	December 2	0.13	April 26	0.20
March 26	0.06	February 12	0.31	December 17	0.25	December 3	0.02	May 17	0.13
April 4	0.01	February 15	0.02	December 19	0.56	December 21	0.27	May 24	0.02
April 5	0.22	February 16	0.25	December 22	0.10	December 22	0.08	May 25	0.08
April 8	0.22	February 23	0.59	December 23	0.08	December 23	0.46	May 31	0.01
April 9	0.28	February 24	0.01	December 27	0.09	December 24	0.09	June 7	0.07
April 10	0.22	February 25	0.51	December 28	0.01	December 25	0.02	June 8	0.63
April 16	0.16	February 26	0.14	December 31	1.18	December 27	0.05	June 9	0.01
April 17	0.86	February 28	0.02	1883.		December 28	0.02	June 11	1.11
April 21	0.03	March 1	0.04	January 1	0.11	1884.		June 12	0.89
April 22	0.06	March 9	0.81	January 6	0.01	January 2	0.05	June 13	0.11
May 8	0.05	March 10	0.40	January 16	0.03	January 3	0.07	June 22	0.16
May 30	0.15	March 11	0.02	January 24	1.08	January 4	0.04	Total	29.12
June 2	0.07	March 12	0.57	February 6	0.11	January 5	0.39		
June 3	0.22	March 13	0.53	February 9	0.01	January 8	0.02	*Rain year 1884–85.*	
June 6	0.35	March 14	0.54	February 12	0.12	January 24	0.02		
Total	27.24	March 15	0.28	February 13	0.46	January 25	0.03	1884.	
Rain year 1881–82.		March 16	0.07	February 14	0.11	January 26	0.58	August 4	0.06
		March 17	0.21	March 11	0.02	January 27	0.16	September 7	0.21
1881.		March 18	0.09	March 25	0.28	January 28	0.52	September 30	0.12
September 21	0.18	April 2	0.02	March 26	1.42	January 29	0.92	October 11	0.04
September 22	0.05	April 3	0.01	March 27	0.44	January 30	0.87	October 12	0.98
October 2	0.12	April 4	0.01	March 28	0.45	January 31	0.14	October 13	0.38
October 25	0.03	April 5	0.32	March 29	0.18	February 1	0.01	October 14	0.80
October 26	0.26	April 8	0.43	March 30	0.07	February 2	0.21	October 15	0.06
October 27	0.11	April 9	0.50	April 1	0.08	February 3	0.42	November 7	0.01
October 29	0.11	April 18	0.01	April 2	0.51	February 4	0.32	November 9	0.04
November 14	0.18	April 19	0.12	April 3	0.03	February 5	0.72	November 14	0.23
November 15	1.05	April 21	0.01	April 7	0.02	February 6	0.15	November 15	0.01
November 16	0.28	April 22	0.07	April 11	0.02	February 10	0.01	December 16	0.29
November 27	0.08	April 23	0.08	April 12	0.08	February 14	1.17	December 17	0.59
November 28	0.06	April 24	0.01	April 18	0.28	February 15	1.38	December 18	0.38
November 30	0.35	May 1	0.15	April 19	0.62	February 16	0.71	December 19	0.32
December 1	0.10	May 3	0.03	April 29	0.07	February 17	0.65	December 20	1.48
December 3	0.23	June 5	0.03	May 3	0.75	February 19	0.09	December 21	0.04
December 4	1.11	Total	15.88	May 4	0.91	March 3	0.02	December 22	0.38
December 5	0.01	*Rain year 1882–83.*		May 5	0.76	March 4	0.05	December 23	2.03
December 6	0.02			May 6	0.17	March 5	0.44	December 24	0.40
December 9	0.01	1882.		May 7	0.02	March 6	0.29	December 25	0.65
December 10	0.16	September 30	0.28	May 10	0.02	March 7	1.00	December 26	0.01
December 11	0.28	October 1	0.23	May 11	0.02	March 8	1.68	December 27	0.07
December 14	0.06	October 2	0.79	May 12	0.15	March 9	0.41	December 28	0.02
December 15	0.51	October 3	0.30	May 14	0.56	March 10	0.05	December 31	0.09
December 23	0.26	October 5	0.15	May 15	0.07	March 13	0.30	1885.	
December 25	0.07	October 6	0.11	May 16	0.03	March 14	0.69	January 1	0.24
December 26	0.45	October 7	0.15	May 29	0.02	March 18	0.06	January 7	0.06
December 27	0.01	October 10	0.21	Total	19.59	March 21	0.05	January 9	0.92
1882.		October 12	0.01	*Rain year 1883–84.*		March 22	0.06	January 10	0.32
January 1	0.05	October 13	0.39			March 24	0.90	January 12	0.41
January 2	0.09	October 23	0.09	1883.		March 25	0.15	January 13	0.02
January 3	0.16	October 30	0.01	September 29	0.37	March 26	0.73	January 27	0.11
January 4	0.07	October 31	0.37	October 1	0.03	March 27	0.29	January 29	0.03
January 5	0.06	November 1	1.30	October 23	0.03	March 28	0.01	February 1	0.06
January 22	0.22	November 2	2.32	October 24	0.06	April 8	1.10	February 2	0.01
						April 9	1.10	February 5	0.01

RAINFALL (INCHES AND HUNDREDTHS) AS MEASURED BY JOHN PETTEE, JANUARY 1, 1865, TO MARCH 19, 1902—Cont'd.

Date.	Amount.
Rain year 1884–85.	
1885.	
February 18	0.10
February 20	0.05
March 17	0.56
March 18	0.07
March 24	0.04
March 25	0.03
March 30	0.35
April 1	0.03
April 2	0.02
April 3	0.04
April 4	0.03
April 5	0.02
April 6	0.99
April 7	1.64
April 8	0.58
April 10	0.03
April 16	0.21
April 17	0.04
April 26	0.01
April 27	0.01
May 13	0.03
June 2	0.01
June 8	0.11
June 9	0.18
June 18	0.01
Total	17.07
Rain year 1885–86.	
1885.	
July 7	0.03
September 23	0.03
October 13	0.58
October 29	0.01
November 1	0.01
November 3	0.14
November 4	0.55
November 5	0.37
November 6	1.22
November 7	0.02
November 8	0.02
November 9	0.65
November 14	0.13
November 15	1.41
November 16	1.36
November 17	0.48
November 18	0.48
November 20	0.25
November 21	0.82
November 22	0.03
November 23	1.46
November 24	0.89
November 28	0.30
December 6	0.03
December 10	0.18
December 14	0.06
December 16	0.01
December 20	1.49
December 21	0.87
December 22	0.36
December 23	0.03
December 24	0.60
December 25	0.70
December 30	0.03
Rain year 1885–86.	
1886.	
January 12	0.03
January 13	0.06
January 15	0.01
January 16	0.07
January 17	0.06
January 18	1.05
January 19	0.27
January 20	0.49
January 21	0.45
January 22	0.65
January 23	1.37
January 24	0.63
January 26	0.89
February 7	0.02
February 26	0.04
February 27	0.17
March 2	0.24
March 3	0.01
March 4	0.04
March 6	0.15
March 8	0.24
March 9	0.35
March 10	0.01
March 16	0.48
March 17	0.20
March 30	0.14
March 31	0.44
April 1	0.17
April 5	0.11
April 6	0.50
April 7	0.09
April 9	1.05
April 10	1.14
April 11	0.02
April 12	0.41
April 13	0.15
April 14	0.16
April 15	0.22
April 16	0.40
May 5	0.03
May 6	0.13
May 7	0.13
Total	28.42
Rain year 1886–87.	
1886.	
July 15	0.36
October 15	0.71
October 16	0.02
October 17	0.10
October 26	0.13
October 27	0.02
October 29	0.25
October 30	0.36
November 10	0.06
November 11	0.02
November 19	0.13
November 20	0.48
December 6	0.54
December 7	0.02
December 8	0.89
December 22	0.04
Rain year 1886–87.	
1886.	
December 23	0.02
December 28	0.01
December 29	0.13
1887.	
January 12	0.04
January 13	0.01
January 14	0.02
January 15	0.04
January 18	0.53
January 19	0.38
January 20	0.28
January 24	0.01
January 26	0.03
January 31	0.14
February 1	0.07
February 3	0.58
February 4	3.53
February 5	0.59
February 7	0.20
February 8	0.10
February 9	0.06
February 10	0.28
February 11	0.86
February 12	0.24
February 13	0.71
February 14	0.03
February 15	0.04
February 16	0.30
February 20	0.22
February 21	0.07
February 23	0.02
February 24	0.26
March 1	0.06
March 2	0.32
March 3	0.41
March 10	0.02
March 17	0.08
April 4	0.02
April 6	0.36
April 8	1.10
April 9	0.06
April 12	0.05
April 13	0.02
April 19	0.37
April 28	0.07
April 29	0.08
May 6	0.02
May 8	0.01
May 9	0.01
May 18	0.02
May 19	0.01
May 23	0.01
May 29	0.01
June 11	0.01
June 12	0.04
Total	17.04
Rain year 1887–88.	
1887.	
September 4	0.01
September 5	0.13
September 6	0.07
Rain year 1887–88.	
1887.	
September 21	0.05
November 5	0.01
November 28	0.50
November 29	0.54
November 30	0.08
December 1	0.87
December 2	0.03
December 3	0.05
December 4	0.05
December 7	0.20
December 11	0.07
December 25	0.09
December 27	0.05
December 28	1.86
December 29	0.19
December 30	0.04
December 31	0.08
1888.	
January 1	1.05
January 2	1.52
January 3	0.05
January 4	0.78
January 12	0.01
January 13	0.01
January 19	0.26
January 20	1.17
January 21	0.33
January 22	0.04
January 23	0.07
January 24	0.01
January 26	0.15
January 28	0.11
January 29	0.11
January 30	0.37
January 31	0.71
February 9	0.04
February 10	0.34
February 11	0.18
February 12	0.13
February 13	0.07
February 14	0.06
February 29	0.03
March 1	1.33
March 2	0.27
March 3	0.05
March 4	1.56
March 5	0.01
March 7	0.04
March 12	0.14
March 13	0.01
March 23	0.02
March 30	0.42
April 3	0.09
May 2	0.11
May 3	0.18
May 14	0.03
May 24	0.05
May 29	0.12
May 30	0.06
June 1	0.03
June 3	0.03
June 6	0.01
Rain year 1887–88.	
1888.	
June 9	0.03
June 14	0.17
June 16	0.03
June 18	0.08
Total	16.94
Rain year 1888–89.	
1888.	
July 21	0.01
September 14	0.88
September 15	0.05
October 5	0.03
October 6	0.01
October 16	0.07
October 29	0.02
November 14	0.29
November 15	1.85
November 16	0.10
November 17	1.17
November 18	0.01
November 20	0.42
November 21	0.20
November 22	0.06
November 25	0.03
November 29	0.08
December 1	0.05
December 8	0.73
December 9	0.36
December 10	0.08
December 12	1.20
December 13	0.56
December 14	0.60
December 15	0.25
December 16	0.03
December 20	0.02
December 21	0.69
December 22	0.19
December 23	0.05
December 24	0.06
December 25	0.69
December 26	0.34
December 28	0.02
December 29	0.31
1889.	
January 8	0.85
January 10	0.11
January 12	0.14
January 17	0.23
January 20	0.04
January 21	0.07
February 5	0.02
February 14	0.09
February 15	0.04
February 17	0.11
February 23	0.27
February 24	0.38
March 7	0.62
March 8	0.52
March 10	0.44
March 11	0.22
March 12	2.55

RAINFALL (INCHES AND HUNDREDTHS) AS MEASURED BY JOHN PETTEE, JANUARY 1, 1865, TO MARCH 19, 1902—Cont'd.

Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.
Rain year 1888–89.		*Rain year 1889–90.*		*Rain year 1889–90.*		*Rain year 1890–91.*		*Rain year 1891–92.*	
1889.		1889.		1890.		1891.		1892.	
March 13	0.53	December 5	1.22	March 6	0.53	February 27	0.51	January 1	0.01
March 14	0.02	December 6	0.97	March 7	0.15	February 28	0.68	January 6	0.32
March 15	0.90	December 7	1.05	March 8	0.36	March 1	0.08	January 7	0.16
March 16	0.08	December 8	0.39	March 9	0.13	March 2	0.01	January 8	0.04
March 17	0.45	December 9	0.16	March 17	0.40	March 3	0.14	January 25	1.18
March 19	0.67	December 10	0.37	March 18	1.49	March 5	0.17	January 26	0.07
March 26	0.02	December 11	0.77	March 22	0.10	March 9	0.05	January 29	0.01
March 27	0.02	December 12	0.02	March 24	0.02	March 10	0.04	January 31	0.27
April 1	0.04	December 16	0.48	March 25	0.26	March 11	0.02	February 3	0.40
April 2	0.02	December 17	0.72	March 28	0.23	March 12	0.01	February 5	0.30
April 3	0.13	December 18	0.67	March 29	0.21	March 15	0.27	February 6	0.07
April 4	0.04	December 19	0.83	March 30	0.15	March 26	0.39	February 16	0.04
April 7	0.31	December 20	0.09	April 5	0.58	March 27	0.10	February 17	0.89
April 8	0.01	December 21	2.03	April 17	0.52	April 4	0.01	February 18	0.68
April 9	0.03	December 22	0.30	April 18	0.04	April 6	1.24	February 19	0.22
April 12	0.18	December 23	0.89	April 29	0.06	April 7	0.13	February 20	0.01
April 13	0.06	December 24	0.89	May 6	0.13	April 9	0.29	February 28	0.03
April 14	0.19	December 25	0.01	May 7	0.43	April 10	0.12	February 29	0.38
May 1	0.07	December 26	0.04	May 9	0.52	April 12	0.23	March 1	0.14
May 3	0.15	December 27	0.07	May 10	0.22	April 13	0.20	March 2	0.13
May 4	1.18	December 28	0.02	June 16	0.01	April 15	0.03	March 14	0.38
May 5	0.23	December 29	0.06	June 22	0.02	April 16	0.46	March 15	0.11
May 6	0.38	December 30	0.06	Total	46.42	May 5	0.74	March 17	0.03
May 7	0.12	December 31	0.12			May 6	0.01	March 18	0.66
May 11	0.01	1890.		*Rain year 1890–91.*		May 26	0.18	March 19	0.14
May 12	0.02	January 1	0.13			May 27	0.39	March 22	0.03
May 13	0.05	January 2	1.06			May 29	0.02	March 26	0.37
May 14	0.13	January 3	0.39	1890.		May 30	0.04	March 27	0.02
June 27	0.01	January 4	0.38	July 7	0.01	June 10	0.08	March 29	0.90
Total	24.26	January 6	0.06	September 27	0.01	June 11	0.01	March 30	0.04
		January 9	0.04	September 28	0.01	Total	18.64	March 31	0.17
Rain year 1889–90.		January 11	0.14	September 29	0.16			April 1	0.17
		January 12	0.61	November 24	0.03	*Rain year 1891–92.*		April 2	0.02
1889.		January 14	0.02	November 25	0.02			April 14	0.26
October 6	0.55	January 15	1.02	December 2	1.75	1891.		April 16	0.08
October 7	0.33	January 16	0.57	December 3	0.29	July 8	0.10	April 20	0.24
October 8	0.01	January 17	0.59	December 4	0.02	July 9	0.01	April 21	0.04
October 17	2.20	January 18	0.03	December 18	0.44	September 4	0.04	April 23	0.09
October 19	0.96	January 19	0.48	December 29	0.84	September 5	0.02	April 24	0.01
October 20	0.48	January 20	0.61	December 30	0.06	September 8	0.01	April 28	0.23
October 21	1.00	January 21	0.10	December 31	0.05	September 12	0.09	April 29	0.04
October 22	0.07	January 22	0.36	1891.		September 14	0.04	April 30	0.21
October 24	0.47	January 23	0.32	January 1	0.17	September 21	0.63	May 1	0.07
October 25	0.44	January 24	2.06	January 4	0.82	October 28	0.07	May 4	0.01
October 26	0.69	January 25	0.05	January 16	0.02	October 31	0.17	May 5	0.38
October 27	0.01	January 28	0.06	January 31	0.42	November 4	0.06	May 6	0.06
October 29	0.01	January 29	0.31	February 1	0.03	November 18	0.25	May 9	0.08
November 16	0.03	February 3	0.03	February 4	0.06	November 29	0.01	May 14	1.07
November 17	1.08	February 4	0.02	February 6	0.03	November 30	0.32	Total	20.24
November 18	0.29	February 5	0.04	February 10	0.04	December 1	0.03		
November 19	0.86	February 15	0.88	February 11	0.02	December 3	1.15	*Rain year 1892–93.*	
November 20	0.06	February 16	0.25	February 13	0.01	December 8	0.40		
November 21	0.03	February 17	0.51	February 14	1.81	December 9	0.01	1892.	
November 22	0.25	February 18	0.78	February 15	2.39	December 16	0.48	September 28	0.02
November 28	0.01	February 19	1.96	February 17	0.48	December 19	0.55	October 5	0.02
November 29	0.31	February 20	0.35	February 19	0.04	December 22	0.10	October 8	0.29
November 30	0.05	February 21	0.66	February 21	0.78	December 26	0.57	October 15	0.85
December 1	0.08	February 24	0.14	February 22	0.52	December 27	0.02	October 16	0.36
December 2	0.26	February 25	0.02	February 23	0.24	December 28	1.68	October 29	0.31
December 3	0.26	March 3	0.13	February 24	0.08	December 29	1.12	October 30	0.15
December 4	1.40	March 4	0.28	February 26	0.34	December 31	1.00	November 22	0.26

RAINFALL (INCHES AND HUNDREDTHS) AS MEASURED BY JOHN PETTER, JANUARY 1, 1865, TO MARCH 19, 1902—Cont'd.

Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.
Rain year 1892–93.		*Rain year 1893–94.*		*Rain year 1893–94.*		*Rain year 1894–95.*		*Rain year 1895–96.*	
1892.		1893.		1894.		1895.		1895.	
November 23..	0.23	September 8...	0.13	March 15.....	0.06	January 6.....	0.02	December 14...	0.18
November 25..	0.48	September 10..	0.16	March 16.....	0.02	January 7.....	0.27	December 15...	0.05
November 26..	0.16	September 11..	0.05	March 18.....	0.03	January 8.....	0.84	December 16...	0.08
November 27..	1.55	October 8.....	0.17	March 29.....	0.02	January 12.....	0.56	December 17...	0.12
November 28..	0.03	October 14.....	0.02	April 21.....	0.01	January 15.....	1.02	December 18...	0.26
November 29..	1.28	October 15.....	0.01	April 24.....	0.18	January 16.....	0.88	December 19...	0.57
November 30..	1.32	October 30.....	0.03	April 25.....	0.03	January 17.....	0.81	December 20...	0.32
December 1....	0.46	November 5 ...	0.06	April 26.....	0.34	January 18.....	0.58	December 21...	0.07
December 2....	2.82	November 6 ...	0.11	May 13.....	0.30	January 20.....	0.14	December 23...	0.02
December 3....	0.24	November 8 ...	0.02	May 14.....	0.18	January 21.....	0.70	1896.	
December 4....	0.01	November 22..	0.04	May 20.....	0.15	January 22.....	0.76	January 12.....	0.03
December 21...	0.03	November 23..	1.33	May 25.....	0.95	February 10 ...	0.63	January 13.....	0.75
December 22...	0.07	November 24..	0.18	May 26.....	0.30	February 11 ...	2.35	January 14.....	0.18
December 23...	1.43	November 25..	1.58	May 30.....	0.09	February 12 ...	0.17	January 15.....	0.96
December 24...	0.56	November 26..	1.20	May 31.....	0.02	February 21 ...	0.15	January 16.....	0.93
December 25...	0.34	November 27..	0.15	June 1.....	0.15	February 22 ...	0.27	January 17.....	2.30
December 26...	0.01	November 29..	0.53	June 2.....	0.07	March 12.....	0.02	January 18.....	0.04
1893.		November 30..	0.01	June 3.....	0.17	March 16.....	0.02	January 19.....	1.41
January 14....	0.24	December 13...	0.04	June 16.....	0.17	March 17.....	0.13	January 20.....	0.27
January 15....	0.19	December 14...	0.27	Total ...	24.44	March 19.....	0.72	January 21.....	0.02
January 25....	0.45	December 20...	1.16	*Rain year 1894–95.*		March 21.....	0.53	January 22.....	0.64
January 26....	0.64	December 21...	0.31			March 26.....	0.37	January 24.....	0.77
January 27....	0.82	December 22...	0.01			March 27.....	0.73	January 25.....	0.15
January 29....	1.36	December 23...	0.51	1894.		April 1.....	0.01	January 26.....	1.82
January 30....	0.11	December 24...	0.23	September 29..	1.56	April 9.....	0.02	January 27.....	0.95
February 1....	0.30	December 25...	0.02	October 17.....	0.81	April 13.....	0.04	January 31.....	0.19
February 2....	0.04	December 26...	0.39	October 18.....	0.05	April 26.....	0.73	February 20 ...	0.02
February 3....	0.25	December 31...	0.42	October 19.....	0.40	April 27.....	0.57	February 26 ...	0.05
February 4....	0.66	1894.		October 20.....	0.41	May 1.....	0.36	February 27 ...	0.12
February 5....	0.04	January 1.....	0.45	October 22.....	0.77	May 3.....	0.08	February 28 ...	0.05
February 7....	0.37	January 2.....	0.02	October 23.....	0.03	May 4.....	0.04	March 1	0.80
February 8....	1.03	January 7.....	0.02	November 26..	0.88	May 5.....	0.03	March 2	0.80
February 9....	0.23	January 14.....	1.30	November 27..	0.16	May 25.....	0.09	March 3	0.08
February 11...	0.12	January 15.....	0.78	December 1.....	0.01	May 26.....	0.16	March 4	0.01
March 3.....	0.62	January 16.....	0.04	December 2.....	0.19	May 27.....	0.09	March 5	0.29
March 4.....	0.48	January 17.....	0.44	December 3.....	0.02	May 28.....	0.09	March 14	0.34
March 7.....	0.78	January 18.....	0.12	December 4.....	0.70	Total	34.93	March 15	0.97
March 10.....	1.29	January 19.....	3.17	December 5.....	1.04			March 16	0.02
March 11.....	0.14	January 20.....	1.01	December 6.....	0.87	*Rain year 1895–96.*		March 19	0.04
March 14.....	0.13	January 21.....	0.22	December 7.....	0.76			March 20	0.04
March 15.....	0.07	January 22.....	0.02	December 8.....	1.19	1895.		March 21	0.13
March 17.....	0.05	January 28.....	0.04	December 9.....	0.40	July 4.....	0.01	March 22	0.05
March 18.....	0.48	January 29.....	0.02	December 10...	0.31	September 9...	0.11	March 23	0.01
March 19.....	0.72	February 4	0.67	December 11...	0.04	September 10..	0.02	March 25	0.13
March 20.....	0.31	February 5	0.02	December 14...	0.10	September 11..	0.64	March 26	0.26
March 23.....	0.17	February 6	0.05	December 15...	0.01	September 12..	0.35	March 27	0.01
March 29.....	0.06	February 7	0.11	December 16...	0.03	October 14.....	0.07	April 4.....	0.62
April 2.....	0.01	February 8	0.03	December 17...	0.32	October 15.....	0.02	April 5.....	1.40
April 5.....	0.95	February 9	0.20	December 18...	1.58	October 20.....	0.03	April 6.....	0.01
April 6.....	0.06	February 11 ...	0.02	December 19...	0.88	November 2 ...	0.13	April 8.....	0.40
April 7.....	0.03	February 14 ...	0.01	December 20...	1.29	November 3 ...	0.12	April 9.....	0.08
April 9.....	0.16	February 15 ...	0.74	December 21...	0.32	November 5 ...	1.28	April 13.....	0.29
April 11.....	0.06	February 17 ...	0.25	December 22...	0.06	November 12..	0.01	April 14.....	0.01
April 21.....	0.20	February 18 ...	0.14	December 26...	0.29	November 26..	0.23	April 15.....	0.06
April 22.....	0.03	February 19 ...	1.86	December 27...	0.37	November 27..	0.04	April 18.....	0.04
May 7.....	0.01	February 20 ...	0.02	December 28...	0.19	November 28..	0.19	April 21.....	0.26
May 14.....	0.01	February 27 ...	0.01	December 29...	0.20	November 29..	0.02	April 22.....	0.14
May 15.....	0.04	March 1	0.39	December 30...	0.45	November 30..	0.01	April 23.....	3.18
May 16.....	0.18	March 2	0.07	1895.		December 1....	0.02	April 24.....	0.33
June 21.....	0.03	March 5	0.26	January 3.....	2.07	December 4....	0.03	April 25.....	0.24
Total	27.15	March 7	0.03	January 4.....	1.54	December 5....	0.26	April 28.....	0.04
		March 8	0.03	January 5.....	0.20	December 6....	0.02	April 29.....	0.05

RAINFALL (INCHES AND HUNDREDTHS) AS MEASURED BY JOHN PETTEE, JANUARY 1, 1865, TO MARCH 19, 1902—Cont'd.

Date.	Amount.
Rain year 1895–96.	
1896.	
April 30	0.02
May 1	0.02
May 3	0.15
May 4	0.03
May 6	0.01
May 10	0.52
May 20	0.20
May 21	0.31
May 28	0.04
Total	29.36
Rain year 1896–97.	
1896.	
July 10	0.01
August 17	0.01
August 18	0.02
August 29	0.06
September 18	0.06
September 19	0.03
September 20	0.02
September 21	0.49
October 10	0.03
October 25	0.02
October 26	1.74
October 29	0.05
October 31	0.05
November 8	0.63
November 9	0.28
November 16	0.30
November 17	0.02
November 19	0.56
November 20	0.01
November 21	0.56
November 22	0.32
November 23	8.20
November 24	0.06
December 11	0.28
December 12	0.18
December 13	0.08
December 14	1.49
December 15	0.72
December 16	0.02
December 23	0.03
December 25	0.24
December 26	1.22
December 27	0.15
December 28	0.11
December 29	0.57
December 30	0.44
1897.	
January 16	0.04
January 23	0.08
January 27	0.24
January 28	1.20
January 29	0.05
January 30	0.65
January 31	1.85
February 1	0.11
February 2	0.08
February 3	1.07
February 4	1.36
February 5	0.22
February 6	0.08
February 7	0.43
February 11	0.07
February 12	0.23
February 14	0.04
February 15	0.04
February 16	0.08
February 17	0.11
February 18	0.47
February 19	0.26
February 28	0.45
March 1	0.63
March 2	0.99
March 4	0.17
March 5	0.74
March 6	1.08
March 7	0.13
March 8	0.04
March 16	0.06
March 17	0.07
March 18	0.04
March 19	0.05
March 25	0.02
March 27	2.13
March 28	0.02
March 31	0.48
April 5	0.07
April 18	0.04
May 13	0.02
May 16	0.70
June 14	0.01
June 19	0.28
June 20	0.02
Total	31.01
Rain year 1897–98.	
1897.	
September 2	0.02
September 30	0.08
October 6	0.01
October 12	0.02
October 21	0.29
October 22	1.67
October 23	0.44
November 4	0.25
November 6	0.03
November 13	0.02
November 19	0.15
November 20	0.03
November 22	0.51
November 23	0.13
November 24	0.07
December 6	0.03
December 7	1.40
December 8	0.02
December 10	0.10
December 11	0.07
December 13	0.21
January 5	0.19
January 6	0.25
January 8	0.07
January 11	0.40
January 15	0.27
January 16	0.14
January 18	0.03
January 24	0.08
January 31	0.36
February 2	0.07
February 5	0.29
February 6	0.24
February 11	0.01
February 20	0.73
February 23	0.67
February 24	0.61
February 25	0.02
February 26	0.01
February 27	0.31
March 7	0.18
March 14	0.08
March 16	0.42
March 24	0.03
April 5	0.22
May 12	0.05
May 13	0.01
May 14	1.54
May 15	0.15
May 21	0.15
May 26	0.02
May 27	0.10
May 31	0.35
June 8	0.06
June 9	0.01
Total	13.67
Rain year 1898–99.	
1898.	
August 1	0.11
August 2	0.05
September 21	0.15
September 24	0.72
September 25	0.32
October 1	0.25
October 5	0.02
October 6	0.03
October 7	0.38
October 22	0.15
October 30	0.05
November 18	0.45
November 19	0.17
November 21	0.07
November 28	0.13
November 29	0.15
December 13	0.57
December 14	0.15
December 18	0.78
December 19	0.06
December 20	0.31
December 29	0.03
January 1	1.08
January 2	0.12
January 6	0.94
January 7	0.06
January 9	1.25
January 10	0.67
January 11	0.25
January 13	0.78
January 14	0.39
January 15	0.06
January 16	0.01
January 31	0.03
February 1	0.14
February 2	0.02
February 28	0.49
March 1	0.25
March 2	0.03
March 8	0.07
March 10	0.01
March 11	0.01
March 13	0.06
March 14	1.32
March 15	1.43
March 16	0.15
March 18	0.05
March 19	0.79
March 20	0.14
March 21	1.01
March 22	2.29
March 23	2.08
March 24	0.41
March 28	0.04
April 17	0.02
April 22	0.01
April 23	0.89
April 24	0.13
April 25	0.03
April 26	0.06
April 27	0.03
April 30	0.24
May 23	0.15
May 24	0.03
May 30	0.08
May 31	0.96
June 24	0.01
Total	24.12
Rain year 1899–1900.	
1899.	
October 1 to 31	4.57
November 3	0.14
November 8	0.30
November 9	0.50
November 10	0.39
November 11	0.40
November 15	0.33
November 16	0.34
November 18	0.19
November 20	0.85
November 21	0.71
November 25	0.01
November 27	0.03
November 28	0.23
November 29	0.01
December 4	0.09
December 7	0.28
December 10	0.13
December 11	0.19
December 13	0.22
December 14	1.83
December 15	0.53
December 16	0.28
December 29	1.01
December 31	0.04
1900.	
January 1	1.51
January 2	2.37
January 3	0.01
January 4	0.26
January 5	0.04
January 6	0.67
January 7	0.11
January 28	0.28
February 1	0.09
February 3	0.05
February 17	0.06
February 18	0.07
February 19	0.62
February 20	0.23
February 25	0.02
March 2	0.25
March 3	1.46
March 4	0.06
March 5	0.05
March 6	0.44
March 7	0.83
March 8	0.18
March 17	0.01
March 18	0.02
April 1	0.50
April 2	0.21
April 6	0.03
April 10	0.07
April 11	0.50
April 19	0.36
April 20	0.01
April 30	0.01
May 3	0.05
May 4	0.05
May 9	0.22
May 10	0.01
June 10	0.04
June 14	0.02
Total	25.37
Rain year 1900–1901.	
1900.	
August 13	0.02
August 15	0.01
September 4	0.02

RAINFALL (INCHES AND HUNDREDTHS) AS MEASURED BY JOHN PETTEE, JANUARY 1, 1865, TO MARCH 19, 1902—Cont'd.

Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.
Rain year 1900–1901.		*Rain year 1900–1901.*		*Rain year 1900–1901.*		*Rain year 1901–2.*		*Rain year 1901–2.*	
1900.		1901.		1901.		1901.		1902.	
September 11..	0.63	January 1.....	0.06	March 24	0.03	November 9 ...	1.20	February 5.....	0.04
September 14..	0.01	January 2.....	0.01	March 25	0.07	November 10 ..	0.08	February 6.....	0.48
October 1.....	0.01	January 3.....	0.36	April 1.....	0.11	November 14 ..	0.22	February 7.....	1.06
October 2.....	0.51	January 4.....	1.26	April 2.....	0.18	November 15 ..	0.09	February 8.....	0.28
October 4.....	0.44	January 5.....	0.09	April 5.....	0.10	November 18 ..	0.16	February 10....	0.02
October 11.....	0.04	January 6.....	1.80	April 28.....	1.40	November 19 ..	0.01	February 11....	0.48
October 18.....	0.14	January 7.....	0.04	April 29.....	0.75	November 20 ..	1.88	February 13....	0.32
October 19.....	0.51	January 8.....	0.02	April 30.....	0.34	November 23 ..	0.14	February 14....	1.58
October 27.....	0.21	January 10.....	0.44	May 17.....	0.08	November 24 ..	0.01	February 15....	0.08
October 30.....	0.29	January 11.....	0.50	May 20.....	0.73	November 26 ..	0.01	February 16....	0.20
October 31.....	0.03	January 19.....	0.10	May 22.....	0.01	November 27 ..	0.10	February 19....	0.18
November 7 ...	0.16	January 20.....	0.45	May 25.....	0.18	November 28 ..	0.62	February 20....	0.46
November 15 ..	0.98	January 21.....	1.12	May 26.....	0.02	December 1....	0.33	February 21....	1.73
November 16 ..	1.03	January 25.....	0.01	Total	27.14	December 2....	0.12	February 22....	0.11
November 17 ..	0.15	February 2.....	0.01			December 3....	0.53	February 23....	1.14
November 18 ..	0.01	February 3.....	0.61	*Rain year 1901–2.*		December 5....	0.56	February 24....	0.95
November 19 ..	0.32	February 4.....	0.97			December 9....	0.02	February 25....	0.54
November 20 ..	2.08	February 7.....	0.23	1901.		1902.		February 26....	0.45
November 21 ..	0.11	February 8.....	0.06	September 22..	0.69	January 1.....	0.18	February 27....	0.01
November 24 ..	0.02	February 13....	0.22	September 23..	0.07	January 15.....	0.02	March 1	1.29
November 25 ..	0.11	February 16....	0.10	September 25..	0.03	January 18.....	0.30	March 2	0.05
December 12...	0.03	February 18....	1.22	September 29..	0.06	January 20.....	0.10	March 5	1.07
December 13...	0.25	February 19....	0.48	September 30..	0.02	January 21.....	0.64	March 6	0.04
December 14...	0.41	February 20....	0.08	October 1.....	0.01	January 23.....	0.51	March 7	0.47
December 15...	0.17	February 22....	1.64	October 2.....	0.04	January 24.....	0.03	March 8	0.54
December 16...	0.86	February 23....	0.36	October 23.....	0.01	January 30.....	0.07	March 13	0.01
December 19...	0.08	March 9	0.53	October 25.....	0.06	February 1.....	0.22	March 18	0.22
December 20...	0.33	March 10	0.50	October 26.....	0.79	February 3.....	0.02	Total to Mar. 19.	24.05
				October 27.....	0.12	February 4.....	0.18		

RECAPITULATION.

1865–66.....	23.57	1873–74.....	24.55	1881–82.	15.83	1889–90.....	46.42	1897–98.....	13.67
1866–67.....	35.94	1874–75.....	18.15	1882–83.....	19.59	1890–91.....	18.64	1898–99.....	24.12
1867–68.....	40.62	1875–76.....	28.28	1883–84.....	29.12	1891–92.....	20.24	1899–1900.....	25.37
1868–69.....	20.56	1876–77.....	9.96	1884–85.....	17.07	1892–93.....	27.15	1900–1901.....	27.14
1869–70.....	20.22	1877–78.....	32.81	1885–86.....	28.42	1893–94.....	24.44	1901–2 to Mar. 19.....	24.05
1870–71.....	13.10	1878–79.....	22.17	1886–87.....	17.04	1894–95.....	34.93		
1871–72.....	28.91	1879–80.....	23.62	1887–88.....	16.94	1895–96.....	29.36		
1872–73.....	19.54	1880–81.....	27.24	1888–89.....	24.26	1896–97.....	31.01		

CLIMATE OF SOUTHERN COAST.

SAN LUIS OBISPO.

Data by Mr. JOHN R. WILLIAMS, Observer, U. S. Weather Bureau.

San Luis Obispo is situated in latitude 35° 18′ north, longitude 120° 39′ west. It is distant from Port Harford, or the Pacific Ocean, about 10 miles. A range of low hills intervenes between the coast and the city. The average elevation of the San Luis Range to the west is about 1,000 feet. The San Luis Valley southwest of the city has a general elevation of less than 150 feet. Directly west of the city, at a distance of about 1 mile, is a large hill (Cerro San Luis Obispo), elevation 1,292 feet. East of the city are the foothills of the Santa Lucia Range, varying in elevation from 1,700 feet 2 miles east of the city to 2,830 feet 5 miles east. The general elevation of the city is about 200 feet above sea level. The elevation of the Weather Bureau office is 201 feet.

Owing to the topography, the range of temperature is large. Daily ranges of 40° or more are not infrequent. The lowest temperature[a] recorded is 24° and the highest 106°. The mean annual temperature is 58.9°. The mean annual rainfall, based upon Weather Bureau records covering a period of six years, is 17.22 inches.

The following table, showing the seasonal rainfall at San Luis Obispo for the past twenty-eight years, is taken from the pamphlet "On the climate and wealth of San Luis Obispo County," by Myron Angel:

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

Season of—	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Total.
1869–70	.....	.....	0.84	0.66	0.78	0.71	4.85	0.74	2.40	0.85	.....	.....	11.83
1870–71	.....	.....	0.68	0.38	2.90	1.51	4.43	.....	2.79	0.28	.....	.....	12.97
1871–72	.....	.....	.....	2.40	13.93	5.16	3.45	0.71	1.87	.....	.....	.....	27.02
1872–73	.....	.....	.....	.....	6.00	5.00	1.79	.....	.....	.....	.....	.....	12.79
1873–74	.....	.....	.....	.....	7.96	4.29	4.04	3.23	1.00	.....	.....	.....	20.52
1874–75	.....	.....	4.28	2.05	0.48	12.10	0.28	0.50	.....	.....	.....	.....	19.69
1875–76	.....	.....	.....	6.20	2.20	9.87	5.29	5.30	1.26	.....	.....	.....	30.12
1876–77	.....	.....	1.16	.....	.....	4.83	0.42	1.74	.....	.....	.....	.....	8.15
1877–78	.....	.....	.....	1.42	3.90	7.88	11.91	2.74	2.75	.....	.....	.....	30.60
1878–79	.....	.....	.....	1.50	2.58	1.78	2.15	1.60	1.80	0.25	.....	.....	11.66
1879–80	.....	.....	0.75	1.40	3.03	1.75	7.23	2.36	8.78	0.52	.....	.....	25.82
1880–81	.....	.....	.....	0.43	13.35	4.71	1.90	1.40	1.85	.....	.....	.....	23.69
1881–82	.....	0.40	1.65	0.25	2.00	0.85	3.40	6.75	1.73	.....	.....	.....	17.03
1882–83	.....	.....	0.69	2.95	0.44	1.50	1.60	4.88	1.10	3.85	.....	.....	17.01
1883–84	.....	.....	.....	.....	3.56	10.57	10.21	12.41	3.39	.....	2.26	.....	42.40
1884–85	.....	.....	2.17	0.13	8.85	2.25	.....	0.94	3.15	0.10	.....	.....	17.59
1885–86	.....	.....	0.04	12.90	3.67	5.78	0.79	2.37	3.75	.....	.....	.....	29.30
1886–87	.....	.....	0.25	1.25	1.06	1.10	9.60	1.29	1.56	0.36	0.07	0.02	16.56
1887–88	.....	2.05	0.25	1.40	3.15	7.02	0.28	3.84	0.14	0.16	0.04	.....	18.33
1888–89	.....	.....	.....	4.48	3.36	1.50	2.08	7.51	0.61	.....	.....	.....	19.54
1889–90	.....	.....	9.19	2.46	11.37	7.27	4.67	3.07	0.29	0.41	.....	.....	38.33
1890–91	.....	0.82	.....	0.42	6.04	0.85	7.14	1.97	1.96	0.13	0.15	.....	19.51
1891–92	.....	0.27	.....	0.20	5.15	0.70	2.88	4.25	0.60	2.23	0.05	.....	16.33
1892–93	.....	.....	0.15	2.76	6.57	4.02	6.35	9.33	1.14	0.08	.....	.....	30.40
1893–94	.....	0.03	0.82	0.45	1.64	1.83	2.31	0.79	0.41	1.32	0.21	0.05	9.86
1894–95	.....	1.81	1.71	0.35	5.45	8.02	1.92	2.93	0.67	0.47	.....	.....	23.33
1895–96	T.	T.	1.80	1.56	0.68	8.23	.....	3.16	2.22	0.10	T.	0.04	17.79
1896–97	0.20	T.	1.44	3.02	3.04	5.22	4.40	3.17	0.18	.....	.....	.....	20.67

[a] On January 2, 1901, a minimum temperature of 22° F. occurred.

Rainfall in twenty-eight years, 589.24 inches; average in twenty-eight years, 21.04 inches.

PRECIPITATION, IN INCHES AND HUNDREDTHS—Continued.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1895	8.05	1.82	2.44	0.67	0.47	0.00	0.00	T.	T.	1.80	1.56	0.68	17.49
1896	8.23	0.00	3.16	2.22	0.10	T.	0.04	0.20	T.	1.44	3.02	3.04	21.45
1897	5.22	4.40	3.17	0.18	0.04	T.	0.00	0.00	0.07	0.79	0.07	0.65	14.59
1898	1.37	2.20	0.91	0.06	1.04	0.04	0.00	0.00	0.20	0.39	0.08	0.64	6.93
1899	5.56	0.28	7.62	1.54	0.10	0.92	0.00	0.00	0.00	3.92	1.94	4.51	26.39
1900	2.13	0.16	2.18	0.98	1.38	0.01	T.	T.	T.	1.93	8.01	0.26	17.04
Average (six years)	5.09	1.48	3.25	0.94	0.52	0.16	T.	0.03	0.04	1.71	2.45	1.63	17.32

WIND VELOCITY (MILES PER HOUR) AND DIRECTION.

	Velocity.	Direction.	Date.	Average hourly.	Average direction.		Velocity.	Direction.	Date.	Average hourly.	Average direction.
January	33	NW.	16, 1895	5.1	N.	August	21	W.	14, 1899	4.4	W.
February	28	S.	24, 1898	5.3	N.	September	22	N.	3, 1899	4.6	W.
March	28	SE.	3, 1896	5.6	W.	October	24	N.	13, 1898	4.5	N.
April	30	S.	24, 1896	6.1	W.	November	28	N.	30, 1899	4.7	N.
May	28	W.	1, 1897	6.3	W.	December	27	N.	1, 1900	5.0	N.
June	26	W.	4, 1896	5.0	W.	Annual	33	NW.	a1895	5.1	W.
July	21	N.	8, 1899	4.4	W.						

a January.

SNOWFALL.

The only snowfall at the station, one-half inch, occurred March 3, 1896.

MEAN MONTHLY AND ANNUAL TEMPERATURE (FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1895	49.7	54.5	52.4	55.6	58.8	63.6	65.6	65.6	64.6	62.7	56.6	52.7	58.5
1896	54.1	56.2	56.2	51.4	58.2	63.8	67.6	66.5	64.3	62.2	56.8	54.5	59.3
1897	51.8	51.6	50.6	59.6	61.2	62.8	65.5	65.4	64.1	59.2	56.6	51.0	58.3
1898	47.6	56.3	52.9	59.7	56.6	63.4	64.5	65.6	64.8	64.6	57.6	53.1	58.9
1899	54.2	54.4	54.0	56.4	54.0	62.4	64.4	64.0	65.5	59.6	57.4	54.3	58.4
1900	56.2	56.2	58.2	54.2	61.6	63.9	64.2	64.9	64.4	62.8	59.8	55.6	60.2
Mean (6 years)	52.3	54.9	54.0	56.2	58.4	63.3	65.3	65.4	64.8	61.8	57.5	52.9	58.9

MAXIMUM AND MINIMUM TEMPERATURES (DEGREES FAHRENHEIT).

Month.	Absolute maximum.		Absolute minimum.		Greatest daily range.	Means of three consecutive warmest days.	Means of three consecutive coldest days.
	Date.	Temperature.	Date.	Temperature.			
January	1899	81	1899	29	50	64.7	41.0
February	1899	86	1899	25	45	67.7	40.7
March	1899	89	1898	28	47	68.0	41.7
April	1898	97	1899	32	58	72.3	44.7
May	1896	98	1899	34	42	72.7	47.7
June	1895	99	1895	37	47	76.3	55.0
July	1896	99	1895	44	45	72.3	60.3
August	1900	106	1895	44	44	77.0	59.3
September	1898	100	1898	41	56	75.0	58.0
October	1896	98	1898	38	52	77.0	52.7
November	1898	94	1895	28	51	70.0	46.3
December	1900	84	1897	24	49	63.3	41.3
Annual	1900	106	1897	24	56	77.0	40.7

WEATHER.

Month.	Average number of days—				Month.	Average number of days—			
	Clear.	Partly cloudy.	Cloudy.	Rainy.		Clear.	Partly cloudy.	Cloudy.	Rainy.
January	12	9	10	9	August	16	12	3	0
February	16	8	5	5	September	17	8	3	0
March	14	8	8	8	October	18	8	5	5
April	17	8	6	4	November	17	8	6	5
May	16	9	6	4	December	20	6	5	4
June	19	9	2	1	Annual	203	102	60	45
July	21	8	1	0					

Annual Meteorological Summary for the Years 1899 and 1900.[a]

[λ=35° 18′ N.; φ = 120° 39′ W.; gravity corr., − 0.03.]

Date.	Pressure.			Temperature.							Moisture.										
		Extremes.		Mean.					Extremes.		Dew-point.		Relative humidity.		Vapor pressure.		Precipitation.		Cloudiness.		
	Monthly mean.	Maximum.	Minimum.	8 a. m.	8 p. m.	Maximum.	Minimum.	Monthly.	Maximum.	Minimum.	8 a. m.	8 p. m.	8 a. m.	8 p. m.	8 a. m.	8 p. m.	Total.	Maximum in 24 hours.	8 a. m.	8 p. m.	Daylight.
1899.	*In.*	*In.*	*In.*	°	°	°	°	°	°	°	°	°	*Pct.*	*Pct.*	*In.*	*In.*	*In.*	*In.*			
January	29.92	30.15	29.46	47.9	59.8	65.4	43.0	54.2	81	29	38	42	72	54	0.238	0.270	5.56	2.36	2.0	3.6	3.5
February	29.91	30.25	29.61	47.8	60.0	67.6	41.1	54.4	86	25	33	39	60	49	0.189	0.241	0.28	0.27	1.0	1.7	2.5
March	29.86	30.04	29.56	48.1	57.2	63.9	44.0	54.0	89	35	41	44	77	65	0.262	0.295	7.62	2.16	3.9	5.0	5.1
April	29.80	29.98	29.65	48.5	60.6	69.1	43.6	56.4	86	32	42	48	80	64	0.269	0.335	1.54	1.38	1.9	3.1	4.0
May	29.82	29.94	29.72	45.3	58.3	65.8	42.2	54.0	75	34	41	48	86	68	0.263	0.332	0.10	0.10	2.6	2.8	3.7
June	29.73	29.90	29.56	52.3	68.3	75.0	49.9	62.4	90	42	49	52	88	59	0.344	0.397	0.92	0.92	3.2	1.1	3.4
July	29.72	29.86	29.62	53.6	71.1	77.8	50.9	64.4	92	46	48	52	85	52	0.341	0.388	0.00	0.00	8.4	0.5	3.1
August	29.73	29.80	29.64	54.3	67.3	75.4	52.7	64.0	88	47	49	52	84	59	0.356	0.391	0.00	0.00	6.9	1.3	3.8
September	29.75	29.88	29.64	53.0	68.7	80.8	50.2	65.5	99	44	48	53	86	58	0.342	0.400	0.00	0.00	4.2	1.0	2.8
October	29.78	30.02	29.41	50.0	63.8	71.9	47.3	59.6	96	40	45	49	83	60	0.298	0.350	3.92	1.36	2.1	2.0	3.2
November	29.88	30.00	29.55	51.0	60.3	67.3	47.5	57.4	77	37	46	52	88	73	0.314	0.386	1.94	0.88	3.5	5.4	5.8
December	29.89	30.18	29.70	47.9	59.2	65.7	42.9	54.3	80	33	38	44	71	59	0.231	0.291	4.51	2.56	2.1	3.7	3.6
Year	29.81	30.25	29.41	50.0	62.9	70.5	46.3	58.4	99	25	43	48	80	60	0.287	0.340	26.39	2.56	3.5	2.6	3.7
1900.																					
January	29.88	30.06	29.65	49.1	61.2	66.5	46.0	56.2	80	36	43	48	80	65	0.280	0.343	2.13	1.82	3.5	4.2	4.9
February	29.88	30.08	29.54	46.8	60.9	69.0	43.5	56.2	80	34	39	45	75	58	0.240	0.303	0.16	0.16	1.6	2.8	3.2
March	29.79	30.04	29.61	50.3	61.4	69.4	46.9	58.2	84	37	44	49	80	66	0.292	0.355	2.18	2.00	3.7	3.9	4.9
April	29.79	29.95	29.58	45.8	58.3	64.7	43.6	54.2	80	34	41	45	84	61	0.261	0.301	0.98	0.54	4.7	3.5	4.5
May	29.76	29.98	29.58	53.7	64.9	74.6	48.7	61.6	88	42	45	49	75	58	0.301	0.347	1.88	0.92	3.3	2.6	3.0
June	29.73	29.88	29.58	54.8	68.1	76.5	51.3	63.9	93	45	49	52	82	57	0.347	0.387	0.01	0.01	4.7	2.6	3.9
July	29.68	29.87	29.55	53.2	70.4	77.0	51.3	64.2	93	46	50	53	87	55	0.356	0.402	T.	T.	6.9	1.0	3.9
August	29.76	29.95	29.62	57.0	68.2	75.4	54.4	64.9	106	49	52	53	85	60	0.391	0.404	T.	T.	7.2	1.8	5.1
September	29.73	29.90	29.50	56.5	69.2	78.0	50.8	64.4	94	41	45	49	70	52	0.308	0.359	T.	T.	3.1	1.4	3.0
October	29.78	30.02	29.56	55.6	64.9	74.5	51.1	62.8	96	43	46	50	74	62	0.323	0.374	1.93	0.62	3.7	2.8	3.9
November	29.82	30.01	29.52	49.7	64.1	78.2	46.4	59.8	92	38	43	48	79	60	0.288	0.341	8.01	4.18	3.0	4.0	4.4
December	29.93	30.05	29.79	47.7	60.6	67.5	43.6	55.6	84	31	38	42	71	54	0.232	0.280	0.26	0.26	1.0	2.8	3.1
Year	29.79	30.08	29.50	51.7	64.4	72.2	48.1	60.2	106	31	45	49	78	59	0.302	0.350	17.04	4.18	3.9	2.8	4.0

[a] From observations at 8 a. m. and 8 p. m. 75th meridian time. Local mean time 8 h. 8 m. slow.

ANNUAL METEOROLOGICAL SUMMARY FOR THE YEARS 1899 AND 1900.

[H = 201 ft.; h_t = 111 ft.; h_r = 3 ft.; h_a = 46 ft.]

Date.	Wind.															Number of days.												
	By self-registers.					Number of winds, 8 a. m. and 8 p. m.													Precipitation.					Maximum temp.		Minimum temperature below 32°.	Electricity.	
	Average hourly velocity.	Prevailing direction.	Maximum velocity.	Direction at time of maximum velocity.	Number of days with gales.	North.	Northeast.	East.	Southeast.	South.	Southwest.	West.	Northwest.	Calm.	Clear	Partly cloudy.	Cloudy.	0.01 inch and over.	0.04 inch and over.	Snow.	Hail.	Fog.	Below 32°.	Above 90°.		Thunderstorms.	Auroras.
1899.	*Miles.*	*Miles.*	*Mi.*																								
January	6.1	N.	32	SE.	0	29	1	1	2	14	0	8	6	1	18	4	9	7	7	0	0	1	0	0	3	0	0
February	6.0	N.	22	N.	0	28	3	2	0	3	0	14	6	0	21	6	1	2	1	0	0	2	0	0	3	0	0
March	6.6	N.	26	W.	0	22	0	0	5	14	1	16	4	0	13	5	13	10	9	0	0	2	0	0	0	0	0
April	5.5	N.	25	N.	0	19	1	0	2	8	1	17	10	2	15	12	3	3	3	0	1	2	0	0	0	0	0
May	5.7	W.	22	W.	0	20	0	1	1	2	1	28	6	3	19	8	4	1	1	0	0	6	0	0	0	0	0
June	4.8	W.	20	W.	0	6	2	3	1	8	1	25	13	1	19	8	3	1	1	0	0	10	0	1	0	0	0
July	4.6	N.	21	N.	0	28	0	1	1	13	1	15	7	1	24	7	0	0	0	0	0	0	0	2	0	0	0
August	4.9	W.	21	W.	0	11	0	2	1	8	0	33	5	2	15	12	4	0	0	0	0	0	0	0	0	0	0
September	4.4	N.	22	N.	0	25	0	3	0	7	0	15	8	2	22	7	1	0	0	0	0	6	0	4	0	0	0
October	4.2	N.	16	W.	0	25	1	1	2	13	0	12	4	4	18	10	3	7	7	0	0	2	0	3	0	0	0
November	4.2	N.	28	N.	0	26	1	2	1	12	0	11	7	0	7	11	12	9	8	0	0	4	0	0	0	0	0
December	4.9	N.	22	S.	0	31	0	4	2	6	0	12	6	1	17	5	9	7	6	0	0	2	0	0	0	0	0
Year	5.2	N.	32	SE.	0	265	9	20	18	108	5	206	82	17	208	95	62	47	43	0	1	37	0	10	6	0	0
1900.																											
January	5.0	N.	22	N.	0	32	0	2	3	9	0	10	2	4	11	11	9	4	4	0	0	3	0	0	0	0	0
February	5.6	N.	25	W.	0	27	0	4	0	1	1	15	6	2	18	9	1	2	1	0	0	3	0	0	0	0	0
March	4.9	W.	24	W.	0	18	0	3	1	12	0	23	4	1	13	7	11	5	4	0	0	5	0	0	0	1	0
April	5.7	W.	28	W.	0	11	0	4	0	8	0	31	2	4	15	6	9	6	5	0	0	1	0	0	0	1	0
May	6.1	W.	20	W.	0	22	0	1	0	9	1	27	2	0	20	5	6	4	4	0	0	1	0	0	0	0	0
June	5.1	W.	20	N.	0	16	0	1	1	11	1	24	4	2	15	9	6	1	0	0	0	5	0	1	0	1	0
July	4.5	W.	16	W.	0	11	0	3	1	13	0	28	6	0	15	12	4	0	0	0	0	1	0	1	0	0	0
August	5.2	W.	20	S.	0	5	0	3	0	15	1	35	2	1	8	15	8	0	0	0	0	0	0	2	0	0	0
September	5.1	W.	22	W.	0	16	0	3	1	4	1	26	3	6	18	8	4	0	0	0	0	1	0	5	0	0	0
October	5.1	W.	23	N.	0	17	0	4	1	15	0	20	4	1	18	4	9	7	7	0	0	3	0	2	0	0	0
November	4.5	N.	28	S.	0	34	0	0	0	11	0	9	3	3	14	9	7	6	6	0	0	3	0	1	0	0	0
December	5.1	N.	27	N.	0	40	0	0	0	0	0	13	8	1	20	7	4	1	1	0	0	3	0	0	1	0	0
Year	5.2	W.	28	S.	0	249	0	28	8	108	5	261	46	25	185	102	78	36	32	0	0	29	0	12	1	3	0

SANTA BARBARA.

Santa Barbara is situated in latitude 34° 23′ north and longitude 119° 40′ west. In considering the entire coast line of California from Point St. George to San Diego one is struck by several marked changes of direction. The most noticeable bend occurs at Point Arguello, where the coast runs nearly due east to Santa Barbara and there bends southeast again with a short stretch running east and west between Point Dume and Santa Monica. Santa Barbara occupies a central position on that part of the coast of California which distinctively faces southward. Santa Barbara Channel, with a depth of water varying from 25 to 365 fathoms, lies between the mainland and San Miguel Island, Santa Rosa Island, Santa Cruz Island, and Anacapa Island. The Santa Ynez Mountains traverse this section of California running east and west, and embrace a number of valleys, the Santa Maria, Lompoc, Los Alamos, and Santa Ynez in the north and the Santa Barbara in the south. The city itself lies encircled by foothills except to the south, where it fronts the sea. Because of these topographical features the climatic conditions approach the ideal.

For many years temperature and rainfall records were maintained by the late Mr. Hugh D. Vail. At the request of the Santa Barbara Chamber of Commerce, Dr. C. Max Richter has carefully gone over these records and compiled the following data, covering a period of fifteen years for Santa Barbara. The records for a period of three years maintained at his own station—Pine Crest, Santa Barbara foothills—are also given. To illustrate the differences in rainfall existing within short distances where topographical conditions are so varied as they are here, Dr. Richter calls attention to the rainfall at Santa Barbara during the month of October, 1901. 2.42 inches of rain fell on October 26, while at Pine Crest, 2 miles away, 2.86 inches fell on the 26th, 0.66 of an inch on the 27th, and 0.03 inch on the 28th. The rainfall at the upper station, elevation 850 feet, exceeded that at the lower station, elevation 100 feet, in the ratio of 3 to 2.

The highest temperature recorded at Santa Barbara is 107° and the lowest 28.5°. The temperatures of winter and spring months approximate 56°; summer and fall months 63°. The annual mean temperature is about 60°.

The Climate of Santa Barbara.

[By Dr. C. M. Richter.]

Months.	Temperature.																		
	Mean—								Greatest daily range.	Least daily range.	Absolute—		Mean of three consecutive highest maxima.	Mean of three consecutive lowest minima.	Mean number of days—				
	Monthly.	Maximum.	Minimum.	Warmest day.	Coldest day.	Three consecutive warmest days.	Three consecutive coldest days.	Daily range.			Maximum.	Minimum.			With 80° or above.	With 80° to 99.5°.	With 90° to 99.5°.	With 100° or above.	With 32° or below.
January	53.0	62.4	43.4	73.5	41.0	66.4	42.4	18.3	35.5	0.6	85.0	28.5	79.0	30.0	0.1	0.1	0.0	0.0	5.0
February	54.6	64.4	45.2	73.0	40.5	68.7	43.7	18.0	36.0	1.0	85.5	29.0	83.0	34.0	1.0	1.0	0.0	0.0	1.0
March	55.3	64.1	46.4	69.5	42.5	67.3	44.0	17.1	37.0	2.0	86.0	34.0	82.3	35.3	0.6	0.6	0.0	0.0	0.0
April	57.9	67.0	48.8	74.5	47.0	71.8	48.3	17.9	41.0	1.0	95.0	36.5	90.0	37.8	1.7	1.7	0.6	0.0	0.0
May	59.4	67.6	51.1	79.8	51.5	75.8	47.0	16.4	40.0	4.0	98.0	40.0	92.1	42.6	1.4	1.4	0.5	0.0	0.0
June	62.6	71.0	54.1	79.0	55.0	75.7	56.0	17.0	39.0	4.5	95.0	44.0	92.0	46.6	2.1	2.1	8.0	0.0	0.0
July	65.5	72.8	57.2	84.0	59.5	77.4	60.8	16.9	46.0	3.5	107.0	49.0	92.1	50.7	3.3	3.3	4.0	1.0	0.0
August	66.9	75.9	58.4	83.3	60.0	80.1	60.1	17.1	32.0	5.0	98.0	50.0	95.0	52.3	5.9	5.9	8.0	0.0	0.0
September	66.1	75.0	57.1	78.8	56.7	76.9	59.0	18.5	49.0	4.0	103.5	48.0	95.0	51.2	5.2	5.2	10.0	1.0	0.0
October	62.6	72.4	53.4	77.0	51.7	79.4	55.5	18.7	40.0	2.0	95.5	42.0	91.4	43.6	3.7	3.7	9.0	0.0	0.0
November	59.1	69.6	48.7	73.0	47.5	72.1	50.0	19.7	39.0	1.0	91.0	37.5	89.0	38.8	2.7	2.7	2.0	0.0	0.0
December	55.6	65.1	46.1	69.0	43.5	67.3	46.6	19.0	36.0	1.0	84.0	32.0	82.7	34.0	1.0	1.0	0.0	0.0	1.0
Annual	59.9	68.9	52.1	84.0	40.5	80.1	42.4	17.2	49.0	0.6	107.0	28.5	96.0	30.0	.....	.....	52.0	2.0	7.0
Winter	54.4	64.0	44.9	69.8	40.5	68.7	42.4	18.5	36.0	0.6	85.5	28.5	83.0	30.0	.....	.....	.....	.....	.....
Spring	57.5	66.2	48.8	75.0	42.5	75.8	44.0	17.1	41.0	1.0	98.0	34.0	92.1	35.3	.....	.....	11.0	.....	.....
Summer	65.0	73.2	56.6	83.8	55.0	80.1	56.0	17.0	46.0	3.5	107.0	44.0	95.0	46.6	.....	.....	20.0	.....	.....
Fall	62.6	72.3	53.1	63.5	47.5	79.4	50.0	19.1	49.0	1.0	103.5	37.5	91.4	38.8	.....	.....	21.0	.....	.....

Months.	Temperature—Continued.												Wind.						
	Mean number of days—				Lowest absolute maxima.	Highest absolute minima.	Mean number days with highest absolute minimum 60° or above.	Number of days with frost.	Mean number of days—				Mean relative humidity.	Mean direction of.	Greatest movement in one day.	Average velocity per hour.	Mean variability of temperature.	Precipitation.	Number of years observed.
	With 40° or below.	With minimum 32° to 39.5°.	With minimum 40° to 49.5°.	With maximum 70° to 79.5°.					Clear.	Partly cloudy.	Cloudy.	Rainy.							
January	8.0	6.0	20.0	4.2	48.0	62.0	0.0	98.0	19.8	3.7	8.2	4.9	67.1	W.	363	3.4	2.3	3.74	....
February	4.7	3.6	19.0	5.0	50.0	64.0	0.1	65.0	17.6	3.7	7.7	5.1	69.2	W.	386	4.0	2.2	3.32	....
March	3.5	2.9	16.0	5.0	48.5	58.0	0.0	27.0	17.8	4.5	8.6	5.3	70.0	W.	402	4.6	2.4	2.27	....
April	0.6	0.2	17.0	7.0	55.0	66.0	.....	2.0	20.7	3.1	6.1	2.6	71.0	W.	306	4.5	2.5	1.23	....
May	0.0	0.0	10.6	6.5	57.5	66.0	.....	0.0	15.5	5.0	9.6	2.3	73.1	W.	337	4.4	2.2	0.37	....
June	0.0	0.0	2.6	13.0	60.0	66.0	1.2	0.0	20.3	5.0	4.5	0.5	74.5	E.	330	4.7	2.1	0.09	....
July	0.0	0.0	0.0	22.0	65.0	66.0	6.0	0.0	23.6	5.4	1.9	0.1	75.9	E. W.	196	4.3	1.9	0.02	....
August	0.0	0.0	0.0	21.6	64.0	68.5	9.0	0.0	22.5	6.1	2.3	0.0	74.6	W.	152	4.0	1.7	T.	....
September	0.0	0.0	0.2	20.0	62.0	67.0	6.0	0.0	21.2	5.3	3.4	0.9	74.8	W.	258	3.7	2.1	0.13	....
October	0.0	0.0	5.2	13.5	60.0	64.0	2.0	0.0	19.6	6.0	5.3	2.4	72.1	W.	240	3.4	2.6	0.75	....
November	0.7	0.2	16.9	10.2	55.0	60.0	0.2	4.0	22.0	3.1	5.1	2.5	66.0	W.	355	3.2	2.5	1.59	....
December	4.0	2.6	20.4	5.4	52.0	62.0	0.0	5.6	20.0	3.0	7.1	5.5	65.1	W.	280	3.6	2.3	3.74	....
Annual	.....	15.6	.....	.....	48.0	68.5	.....	.....	241.0	56.0	67.7	32.5	71.0	W.	402	4.0	2.3	17.19	....
Winter	.....	.....	.....	.....	.....	64.0	.....	.....	.....	.....	.....	.....	67.1	W.	386	.....	.....	.....	....
Spring	.....	.....	.....	.....	.....	66.0	.....	.....	.....	.....	.....	.....	71.4	W.	402	.....	.....	.....	....
Summer	.....	.....	.....	.....	.....	68.5	.....	.....	.....	.....	.....	.....	75.0	E. W.	331	.....	.....	.....	....
Fall	.....	.....	.....	.....	.....	67.0	.....	.....	.....	.....	.....	.....	71.0	W.	258	.....	.....	.....	....

MONTHLY AND ANNUAL PRECIPITATION. (INCHES AND HUNDREDTHS.)

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1868	3.97	2.00	1.08	2.44	0.72	0.00	0.00	0.00	0.00	0.00	1.25	4.26	15.72
1869	3.26	2.12	4.22	0.46	0.20	0.00	0.00	0.00	0.00	0.30	0.65	0.57	11.78
1870	0.25	5.87	0.83	0.99	0.74	0.07	0.00	0.00	0.00	1.04	0.27	1.41	11.47
1871	0.86	2.92	0.02	2.02	0.37	0.00	0.00	0.00	0.00	0.09	1.83	6.56	14.67
1872	2.53	1.81	0.18	1.80	0.00	0.14	0.00	0.02	0.05	0.00	0.00	4.34	10.87
1873	0.58	5.48	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	5.26	11.64
1874	4.54	3.17	0.78	0.28	0.14	0.00	0.00	0.00	0.00	1.91	1.30	0.00	12.12
1875	14.84	0.18	0.38	0.10	0.00	0.00	0.00	0.00	0.00	0.00	6.53	0.31	22.34
1876	7.56	5.67	2.73	0.27	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	16.55
1877	2.72	0.00	0.83	0.18	0.45	0.00	0.00	0.00	0.00	0.00	1.32	3.12	8.61
1878	7.17	11.73	2.47	3.34	0.29	0.07	0.00	0.00	0.00	0.32	0.00	5.16	30.55
1879	5.24	0.71	0.34	1.60	0.21	0.00	0.00	0.00	0.00	0.41	1.62	4.57	14.70
1880	1.30	10.86	1.15	5.73	0.00	0.00	0.00	0.00	0.00	0.25	0.28	9.73	29.30
1881	2.83	0.30	1.25	0.59	0.00	0.00	0.00	0.00	0.44	1.47	0.33	0.95	8.16
1882	1.13	2.38	5.74	1.68	0.00	0.20	0.00	0.00	0.00	0.37	0.77	0.10	12.32
1883	2.18	2.92	3.64	0.29	2.79	0.35	0.00	0.00	0.00	1.32	0.00	2.76	16.25
1884	6.33	9.68	9.77	2.60	0.89	1.62	0.00	0.00	0.00	1.02	0.79	6.62	38.82
1885	1.23	0.07	0.35	3.00	0.00	0.00	0.00	0.00	0.00	0.19	9.84	2.47	17.15
1886	5.12	1.19	2.03	3.40	0.00	0.00	0.00	0.00	0.00	0.39	0.87	0.86	13.86
1887	0.31	8.64	0.13	1.43	0.33	0.03	0.00	0.00	0.38	0.31	1.10	4.43	17.09
1888	10.15	1.30	3.86	0.16	0.02	T.	T.	T.	0.03	0.07	5.62	5.59	26.80
1889	0.29	1.29	7.31	0.49	0.76	0.13	0.00	0.00	0.00	8.65	3.21	10.64	32.77
1890	5.32	2.96	1.10	0.31	0.18	0.00	0.00	0.00	1.50	0.05	0.48	3.53	15.43
1891	0.45	7.92	1.56	1.57	0.30	0.00	0.00	0.00	0.15	0.00	0.00	2.43	14.38
1892	1.10	2.55	2.95	0.46	1.12	0.00	0.00	0.00	0.00	0.26	4.27	6.66	19.37
1893	4.41	3.10	7.80	0.38	0.09	0.00	0.00	0.00	0.00	0.82	0.07	2.94	19.61
1894	0.99	0.76	0.29	0.24	0.91	0.00	0.12	T.	1.36	0.68	0.07	4.67	10.09
1895	6.25	0.67	1.99	0.46	0.02	0.05	T.	0.00	0.00	0.55	0.77	0.93	11.69
1896	6.84	0.00	2.37	1.78	0.08	0.05	0.40	0.00	0.00	0.92	3.51	2.92	18.87
1897	4.35	3.65	2.73	0.02	0.00	0.00	0.00	0.00	0.00	1.44	0.00	0.00	12.19
1898	0.63	0.97	0.28	0.00	1.25	0.00	T.	0.00	3.17	0.14	0.00	0.36	6.80
1899	4.48	0.00	2.78	0.64	0.00	0.78	0.00	0.00	0.00	2.06	1.97	2.35	15.06
1900	2.32	0.05	1.58	0.42	1.90	0.01	0.02	T.	0.04	0.15	3.99	0.02	10.50
Mean of 33 years	3.68	3.12	2.26	1.18	0.40	0.11	0.02	T.	0.22	0.77	1.61	3.23	16.59

The Climate of Santa Barbara Foothills—Pine Crest Station.

[By Dr. C. M. Richter.]

Months.	Temperature. Mean— Monthly.	Maximum.	Minimum.	Warmest day.	Coldest day.	Three consecutive warmest days.	Three consecutive coldest days.	Daily range.	Greatest daily range.	Least daily range.	Absolute. Maximum.	Minimum.	Mean of three consecutive highest maxima.	Mean of three consecutive lowest maxima.	Mean number of days— With 50° or above.	With 80° to 99°.5.	With 90° to 99°.5.	With 100° or above.	With 32° or below.
January	55.4	61.8	49.0	70.0	42.0	69.2	42.5	12.7	22.0	4.0	79.0	34.0	75.7	35.3	0.0	0.0	0.0	0.0	0.0
February	58.0	66.1	50.0	74.0	39.5	72.0	41.7	16.0	28.0	2.0	82.0	31.0	79.3	33.0	0.6	0.6	0.0	0.0	1.0
March	57.4	65.6	49.1	76.5	45.5	74.3	46.2	16.1	28.0	3.0	86.0	37.0	83.7	38.0	1.7	1.7	0.0	0.0	0.0
April	59.3	68.8	49.8	85.0	45.5	83.7	49.0	18.9	34.0	9.0	95.0	39.0	94.7	42.7	4.3	4.3	7.0	0.0	0.0
May	59.4	68.5	50.3	77.5	51.0	74.2	53.3	17.1	31.0	6.0	87.0	40.0	78.7	46.0	3.0	3.0	0.0	0.0	0.0
June	64.4	74.4	54.5	82.5	54.0	79.5	54.8	18.8	34.0	7.0	93.0	46.0	91.7	48.0	7.0	7.0	5.0	0.0	0.0
July	68.1	79.2	56.9	87.5	57.5	84.2	59.8	22.2	32.0	11.0	99.0	50.0	95.3	50.7	13.8	13.3	7.0	0.0	0.0
August	68.9	78.1	58.1	87.0	59.5	82.7	61.0	21.4	33.0	9.0	99.0	51.0	93.3	52.0	11.3	11.3	9.0	0.0	0.0
September	69.9	79.7	60.1	90.0	60.0	86.8	61.5	19.2	34.0	10.0	101.0	49.0	97.3	52.0	15.0	14.3	17.0	2.0	0.0
October	64.8	72.4	55.3	84.5	52.5	82.8	54.0	17.0	29.0	4.0	93.0	46.0	92.0	47.7	6.3	6.3	3.0	0.0	0.0
November	64.7	71.8	55.6	80.5	52.0	79.5	52.2	16.1	25.0	5.0	91.0	43.0	89.0	46.0	5.7	5.7	2.0	0.0	0.0
December	58.4	65.5	51.4	73.0	46.0	72.5	46.8	13.7	28.0	3.0	88.0	39.0	82.0	40.0	1.7	1.7	0.0	0.0	0.0
Annual	62.3	71.0	53.3	90.0	39.5	86.8	41.7	17.4	34.0	2.0	101.0	31.0	97.3	33.0	5.8	5.8	50.0	2.0	1.0
Winter	57.3	64.5	50.1	74.0	39.5	72.5	41.7	14.1	28.0	2.0	83.0	31.0	82.0	33.0	7.0	7.0	0.0	0.0	1.0
Spring	59.7	67.6	49.7	85.0	45.5	83.7	46.2	17.3	34.0	3.0	95.0	37.0	94.7	38.0	2.7	2.7	7.0	0.0	0.0
Summer	66.8	77.2	56.5	87.5	54.0	84.2	54.8	20.8	34.0	7.0	99.0	46.0	95.3	48.0	9.5	9.5	21.0	2.0	0.0
Fall	63.3	74.6	57.0	90.0	52.0	86.8	52.2	17.4	34.0	4.0	101.0	43.0	97.3	46.0	8.1	7.9	22.0	0.0	0.0

Months.	Temperature. Mean number of days— With 40° or below.	With minimum 32° to 39°.5.	With minimum 40° to 49°.5.	With maximum 70° to 79°.5.	Lowest absolute maximum.	Highest absolute minimum.	Mean number of days with highest absolute maximum 60° or above.	Number of days with frost.	Mean number of days— Clear.	Partly cloudy.	Cloudy.	Rainy.	Mean relative humidity.	Wind. Mean direction.	Greatest movement in one day.	Average velocity per hour.	Precipitation.	Number of years observed
January	3.0	2.3	16.3	6.3	64.0	47.0	4.0	0.7	17.3	6.3	7.0	3.0	62.3	N.	278	4.7	2.99	.....
February	2.3	1.7	13.3	10.0	66.0	48.0	3.3	0.0	20.0	4.0	4.0	1.3	52.2	N.	346	4.7	0.55	.....
March	2.3	1.7	16.7	7.7	68.0	52.0	3.0	0.0	17.3	8.6	4.0	5.0	67.2	N.	312	4.9	2.28	.....
April	0.7	0.3	21.0	6.7	78.0	52.0	3.7	0.0	16.7	6.0	7.0	3.0	68.8	N.	281	4.7	0.54	.....
May	0.3	0.0	17.3	8.0	73.0	58.0	2.0	0.0	21.0	4.7	5.0	2.1	68.7	N.	359	3.9	1.77	.....
June	0.0	0.0	2.7	14.7	76.0	58.0	4.7	0.0	22.3	5.1	3.0	0.6	72.0	S.	252	3.1	0.08	.....
July	0.0	0.0	0.0	17.3	78.0	65.0	8.0	0.0	26.7	4.0	0.0	1.0	70.6	S.	186	2.9	0.04	.....
August	0.0	0.0	0.0	17.0	78.0	64.0	11.0	0.0	25.7	3.1	2.0	0.0	72.0	S.	197	2.8	0.00	.....
September	0.0	0.0	0.3	13.0	81.0	67.0	13.7	0.0	23.7	3.0	3.0	1.0	59.7	S.	323	3.5	0.48	.....
October	0.0	0.0	1.7	12.7	76.0	58.0	7.7	0.0	20.0	6.0	5.0	4.0	61.3	S. N.	359	3.9	1.21	.....
November	0.0	0.0	5.3	13.0	72.0	55.0	8.7	0.0	23.0	4.0	4.0	2.8	60.5	N.	299	4.5	2.42	.....
December	1.3	1.3	11.3	7.0	64.0	53.0	5.0	0.0	23.3	2.0	6.0	1.2	46.8	N.	222	5.0	0.65	.....
Annual	7.0	7.3	8.8	11.1	81.0	47.0	.....	.....	25.0	60.0	51.0	2.4	63.5	.....	359	4.0	13.03	.....
Winter	10.3	5.3	4.1	23.3	66.0	47.0	.....	.....	.....	.....	.....	.....	53.0	N.	346	.....	.....	.....
Spring	3.3	1.7	5.5	22.3	78.0	52.0	.....	.....	.....	.....	.....	.....	68.0	N.	359	.....	.....	.....
Summer	0.0	0.0	2.7	49.0	78.0	58.0	.....	.....	.....	.....	.....	.....	71.0	S.	252	.....	.....	.....
Fall	0.0	0.0	7.3	38.7	81.0	55.0	.....	.....	.....	.....	.....	.....	60.0	S. N.	359	.....	.....	.....

LOS ANGELES.

By Mr. G. E. FRANKLIN, Local Forecaster.

Los Angeles City is located in a valley of the same name, 18 miles from the Pacific Ocean. Its chief topographical feature is a range of hills of moderate elevation on the western side, with a general trend north to south, which separates it from the Cahuenga Valley, that extends to the ocean on the west. The eastern side is slightly undulating and broadens out into the Los Angeles Valley, which reaches the ocean on the south.

A great variety of climate may be found within a small radius. A traveler may start from the ocean at Santa Monica, Redondo, Long Beach, or other seaside places in the morning and within two or three hours' ride by rail and cable railway attain an altitude of 2,000 feet, whence by trails he can ascend to 6,000 feet.

The rain storms do not last usually more than two or three days at a time; occasionally they continue a week, and are followed by periods of fine weather lasting two or three weeks. An average of three hundred and seventeen clear days, or days when the sun is but partly obscured, is the record for the past twenty-three and a half years; the sunshine averages 75 per cent. The first rains wash the atmosphere of the summer's dust, when the sky becomes beautifully clear; the later rains are heavier and snow falls in the mountains, though a light fall may occur with the first rain.

The prevailing wind is west, which, coming from the ocean, causes the humidity to average quite high. The nights as a rule are cool and damp and the days warm and dry, or moderately so. Morning fogs are frequent from spring to autumn, but they disappear in the early forenoon.

During heavy fogs the air is so saturated with moisture that it is not uncommon to find a precipitation of one-hundredth of an inch in the gauge. On the other hand, the humidity falls as low as 9 per cent during "northers," which occasionally occur in the summer and autumn months. These "northers" last from one to five days, usually three, and are accompanied by high temperature, which is so modified by the dryness of the air as to be neither oppressive nor debilitating.

In consulting the accompanying temperature tables it should be borne in mind that the instruments from which the data were obtained were located on roofs of buildings, 60 to 70 feet above ground, exposed in standard shelters and above the stratum of colder air which settles on low ground. The temperature so obtained is appreciably different from that on the surface, lower maxima and higher minima resulting. For the above reasons the temperature seldom falls to freezing or below at the Weather Bureau station, while in the low grounds it frequently reaches 32° or several degrees below in winter, when a much higher temperature obtains at the station; this corresponds to the foothill belts, where frost seldom if ever happens. Frost occurs in the low sections of the city when in the hill portions there is not the least trace, and where delicate flowers, such as calla lillies, may be seen in full flower.

MEAN MONTHLY AND ANNUAL TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877							73	71	71	64	63	57	.....
1878	55	55	57	59	63	67	70	71	70	65	59	55	62
1879	53	56	59	60	62	68	69	72	69	66	57	53	62
1880	54	51	52	57	63	66	65	69	66	63	56	56	60
1881	58	59	57	63	64	67	72	71	70	61	57	55	62
1882	50	51	56	58	64	66	71	73	70	63	58	57	61
1883	53	52	58	58	64	71	73	72	74	62	60	56	63
1884	54	56	56	59	63	68	73	73	67	63	61	53	62
1885	55	57	62	63	66	67	72	75	71	66	60	58	64
1886	55	60	55	59	65	69	72	75	68	60	57	56	63
1887	55	51	60	60	64	68	72	70	69	66	60	53	62
1888	50	54	56	63	63	69	73	73	74	66	60	57	63
1889	52	56	59	62	63	66	71	72	73	66	61	55	63
1890	49	54	58	59	63	68	73	73	71	68	66	61	64
1891	56	53	58	59	62	66	74	75	73	66	61	53	63
1892	57	54	56	59	62	64	68	72	68	64	62	54	62
1893	57	55	54	58	63	66	70	71	66	63	57	58	62
1894	51	51	54	59	60	63	67	70	69	66	59	54	63
1895	52	57	56	59	64	66	68	69	69	66	60	56	62
1896	58	60	58	56	63	69	71	71	68	65	60	59	63
1897	56	53	53	61	63	66	70	72	70	62	62	56	62
1898	52	58	55	63	60	67	70	74	71	65	61	57	63
1899	56	54	57	60	60	65	70	69	70	63	62	58	62
1900	58	58	60	57	64	67	71	68	67	64	66	60	64
Average	54	55	57	60	63	67	71	72	70	64	60	56	62

MAXIMUM TEMPERATURE (DEGREES FAHRENHEIT).

1877							93	87	93	80	86	81	93
1878	72	71	76	80	89	81	88	89	103	91	81	88	103
1879	74	80	99	88	97	104	84	98	101	96	84	76	104
1880	76	70	74	83	97	83	85	92	91	89	85	80	97
1881	71	86	89	94	89	88	96	100	102	82	81	79	102
1882	74	77	88	80	86	87	98	99	100	88	81	82	100
1883	82	82	84	89	100	100	90	98	104	83	84	80	104
1884	78	81	72	80	79	98	99	102	92	89	88	76	102
1885	72	81	85	89	80	90	98	106	108	102	78	82	108
1886	75	81	76	80	89	92	98	98	91	82	85	85	98
1887	80	82	85	87	92	100	98	94	91	93	86	78	100
1888	71	74	79	99	83	94	95	97	98	98	84	79	99
1889	71	84	81	93	94	81	93	95	103	89	82	68	103
1890	67	81	81	94	96	105	97	98	94	99	96	82	105
1891	80	71	82	86	74	89	109	96	100	89	85	75	109
1892	81	74	81	88	99	88	90	94	95	96	90	81	99
1893	84	79	88	84	90	90	89	92	90	91	86	88	92
1894	75	73	82	85	80	83	88	97	99	96	92	75	99
1895	77	84	84	82	88	100	85	88	97	91	94	86	100
1896	87	88	89	81	103	99	92	91	92	90	84	84	103
1897	79	88	76	90	76	88	86	96	97	83	92	89	97
1898	84	85	81	99	80	95	91	96	99	91	94	83	99
1899	82	82	90	92	76	89	93	89	95	100	86	82	100
1900	81	84	90	76	87	89	95	93	94	83	96	85	96

Minimum Temperature (Degrees Fahrenheit).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov	Dec.	Annual.
1877							55	56	52	43	45	36	36
1878	37	41	41	42	47	47	52	54	50	43	37	30	30
1879	36	39	42	42	43	50	52	53	47	42	36	30	30
1880	30	34	36	40	42	50	52	52	44	44	35	38	30
1881	37	42	37	48	41	48	51	52	50	43	34	35	34
1882	33	32	35	40	42	50	52	57	46	44	36	35	32
1883	30	28	43	39	40	52	52	50	53	44	42	37	28
1884	34	38	37	42	47	50	52	52	46	43	39	36	34
1885	38	36	42	45	49	47	52	51	51	42	40	40	36
1886	32	41	37	42	44	48	50	54	48	41	34	37	32
1887	33	35	41	40	44	47	51	52	49	47	39	35	33
1888	31	39	36	44	45	50	49	51	55	44	40	41	31
1889	32	33	44	46	46	51	54	53	52	50	43	40	32
1890	34	35	40	42	43	48	55	56	54	46	41	43	34
1891	34	33	40	42	47	49	54	54	52	46	40	33	33
1892	37	38	36	40	42	46	50	53	50	40	41	35	35
1893	35	38	31	39	45	48	50	54	48	46	39	37	31
1894	32	35	35	41	46	46	51	52	49	45	38	39	32
1895	37	36	38	41	47	47	54	51	48	45	36	34	34
1896	36	36	35	38	44	48	54	54	50	47	37	42	35
1897	37	35	38	40	48	50	52	54	52	45	37	30	30
1898	31	40	36	41	46	50	56	56	48	45	41	34	31
1899	37	33	39	42	44	50	53	53	51	45	43	37	33
1900	41	40	40	40	47	52	53	51	49	47	48	37	37

Mean Daily Range in Temperature (Degrees Fahrenheit).

1877							21	22	23	19	24	19	.....
1878	18	16	18	16	17	16	21	20	22	27	25	25	20
1879	18	17	20	18	24	20	22	24	25	25	28	17	21
1880	22	21	22	16	26	20	18	21	22	24	24	15	21
1881	20	21	23	19	22	26	28	28	29	25	27	28	24
1882	18	22	21	24	25	24	26	26	28	26	28	26	24
1883	22	21	17	24	24	27	25	28	27	22	25	22	24
1884	22	16	16	19	18	21	28	27	26	23	25	17	22
1885	21	25	25	22	22	27	27	28	28	27	19	20	24
1886	17	23	20	20	27	24	29	29	25	24	27	22	24
1887	25	18	26	21	26	27	25	25	24	26	23	21	24
1888	16	18	18	22	20	26	28	28	26	22	20	19	22
1889	22	25	20	22	22	20	25	25	24	20	23	12	22
1890	17	21	22	20	18	23	25	22	22	29	30	19	22
1891	25	17	20	23	16	23	25	24	25	24	27	21	22
1892	24	16	19	25	19	24	24	22	25	24	25	19	22
1893	25	21	18	22	21	25	25	23	23	24	23	22	23
1894	22	21	22	22	20	22	26	23	25	25	27	16	23
1895	17	22	20	21	21	23	21	23	28	21	25	25	22
1896	20	28	22	21	23	22	21	22	24	23	21	22	22
1897	19	18	18	24	16	21	21	22	22	20	26	27	21
1898	19	22	23	23	18	21	22	24	26	27	27	24	23
1899	21	24	19	22	19	19	24	21	25	22	22	24	22
1900	22	25	20	20	21	20	21	19	24	21	24	25	22
Average	21	21	20	21	21	23	24	24	25	24	24	21	22

GREATEST AND LEAST DAILY RANGES IN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.		Feb.		Mar.		Apr.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Annual.
	Greatest.	Least.	Greatest.	Least.	Greatest.	Least.	Greatest.	Least.	Greatest.	Least.	Greatest.	Least.	Greatest.	Least.	Greatest.	Least.	Greatest.	Least.	Greatest.	Least.	Greatest.	Least.	Greatest.	Least.	
1877	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	13	29	15	33	12	29	12	35	14	31	5	.....
1878	25	9	23	7	28	8	30	7	32	7	28	8	28	15	26	16	40	14	44	12	41	11	36	7	.....
1879	31	6	31	6	38	6	36	9	38	14	38	10	28	14	32	16	36	14	43	11	36	10	38	4	.....
1880	32	13	34	6	34	10	30	3	34	10	32	9	32	11	34	12	39	13	40	11	36	10	27	7	.....
1881	29	5	32	8	40	7	40	7	39	10	38	12	40	20	37	19	45	19	37	7	37	13	34	11	.....
1882	28	8	31	9	36	7	34	5	40	12	35	12	39	19	37	10	36	13	36	10	37	9	39	13	.....
1883	37	8	33	8	29	6	35	12	43	10	44	14	34	18	38	22	40	17	36	10	38	12	32	4	.....
1884	37	6	30	6	26	5	30	4	28	10	40	5	42	18	38	17	37	12	37	8	39	11	32	6	.....
1885	31	11	35	14	38	12	37	8	28	15	40	16	42	16	42	17	48	16	44	15	36	8	28	7	.....
1886	28	6	33	9	29	12	36	10	39	12	39	10	40	20	37	14	40	14	39	8	39	14	37	10	.....
1887	38	16	31	8	36	10	36	5	39	13	47	13	40	12	35	12	37	11	40	14	37	8	35	13	.....
1888	30	5	30	5	30	8	43	9	33	10	41	15	40	20	39	15	38	13	39	6	39	6	28	5	.....
1889	34	6	35	8	31	9	39	10	35	13	27	13	37	17	34	18	41	13	32	8	33	8	21	5	.....
1890	25	9	32	7	33	6	40	8	37	7	36	13	33	17	34	13	35	8	49	8	39	11	29	3	.....
1891	34	13	28	4	30	7	37	11	26	8	33	14	39	17	35	18	38	14	43	7	39	13	34	7	.....
1892	34	8	30	6	31	8	38	16	41	7	36	10	34	16	32	13	36	14	40	8	39	7	30	5	.....
1893	37	5	33	4	34	6	33	7	34	8	36	13	35	16	31	16	35	12	40	11	38	7	40	7	.....
1894	33	10	36	8	40	5	33	12	32	10	37	13	35	17	32	15	44	12	38	12	42	16	31	3	.....
1895	27	5	34	7	35	6	32	7	35	8	38	15	28	13	33	12	41	18	41	10	42	5	33	14	.....
1896	39	6	39	12	32	8	33	14	35	14	38	12	30	12	29	15	36	13	35	8	30	6	34	12	.....
1897	29	8	31	6	31	10	35	5	26	6	35	14	28	14	31	14	32	9	31	5	34	12	38	15	.....
1898	32	7	35	6	35	9	41	8	30	10	42	9	34	15	34	15	42	8	38	13	37	13	34	10	.....
1899	32	6	36	5	37	7	43	13	27	8	32	11	37	16	32	13	37	11	40	9	38	4	32	8	.....
1900	34	5	36	11	35	7	31	10	33	10	36	8	33	13	27	11	38	12	32	11	34	6	34	18	.....

NUMBER OF DAYS TEMPERATURE WAS ABOVE 90° F.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877	.....	.....	.....	.....	.....	.....	3	0	1	0	0	0	4
1878	0	0	0	0	0	0	0	0	4	1	0	0	5
1879	0	0	1	0	2	3	0	2	4	6	0	0	18
1880	0	0	0	0	1	0	0	0	1	0	0	0	2
1881	0	0	0	1	0	0	5	4	7	0	0	0	17
1882	0	0	0	0	0	0	3	5	2	0	0	0	10
1883	0	0	0	0	3	6	0	8	10	0	0	0	27
1884	0	0	0	0	0	2	5	7	1	0	0	0	15
1885	0	0	0	0	0	1	7	11	5	2	0	0	26
1886	0	0	0	0	0	4	9	13	1	0	0	0	27
1887	0	0	0	0	2	2	3	3	2	5	0	0	17
1888	0	0	0	2	0	3	6	8	9	2	0	0	30
1889	0	0	0	1	1	0	5	5	8	0	0	0	20
1890	0	0	0	1	1	5	5	5	5	6	4	0	32
1891	0	0	0	0	0	0	9	5	9	0	0	0	23
1892	0	0	0	0	3	0	1	4	1	3	0	0	12
1893	0	0	0	0	1	0	0	4	1	2	0	0	8
1894	0	0	0	0	0	0	0	3	4	3	1	0	11
1895	0	0	0	0	0	1	0	0	7	1	2	0	11
1896	0	0	0	0	3	3	1	1	1	0	0	0	9
1897	0	0	0	0	0	0	0	5	5	0	1	0	11
1898	0	0	0	5	0	3	1	8	8	1	2	0	28
1899	0	0	0	2	0	0	3	0	3	2	0	0	10
1900	0	0	0	0	0	0	5	1	2	0	6	0	14

Number of Days Temperature was Below 32° F.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877							0	0	0	0	0	0	0
1878	0	0	0	0	0	0	0	0	0	0	0	1	1
1879	0	0	0	0	0	0	0	0	0	0	0	1	1
1880	1	0	0	0	0	0	0	0	0	0	0	0	1
1881	0	0	0	0	0	0	0	0	0	0	0	0	0
1882	0	0	0	0	0	0	0	0	0	0	0	0	0
1883	1	2	0	0	0	0	0	0	0	0	0	0	3
1884	0	0	0	0	0	0	0	0	0	0	0	0	0
1885	0	0	0	0	0	0	0	0	0	0	0	0	0
1886	0	0	0	0	0	0	0	0	0	0	0	0	0
1887	0	0	0	0	0	0	0	0	0	0	0	0	0
1888	4	0	0	0	0	0	0	0	0	0	0	0	4
1889	0	0	0	0	0	0	0	0	0	0	0	0	0
1890	0	0	0	0	0	0	0	0	0	0	0	0	0
1891	0	0	0	0	0	0	0	0	0	0	0	0	0
1892	0	0	0	0	0	0	0	0	0	0	0	0	0
1893	0	0	1	0	0	0	0	0	0	0	0	0	1
1894	0	0	0	0	0	0	0	0	0	0	0	0	0
1895	0	0	0	0	0	0	0	0	0	0	0	0	0
1896	0	0	0	0	0	0	0	0	0	0	0	0	0
1897	0	0	0	0	0	0	0	0	0	0	0	1	1
1898	1	0	0	0	0	0	0	0	0	0	0	0	1
1899	0	0	0	0	0	0	0	0	0	0	0	0	0
1900	0	0	0	0	0	0	0	0	0	0	0	0	0

Mean Relative Humidity (Per Cent).

1877							64	63	64	67	45	57	
1878	62	70	74	71	72	73	71	70	62	60	58	48	66
1879	64	74	71	65	62	65	70	68	81	53	71	71	68
1880	64	67	76	73	73	67	74	74	71	65	56	71	69
1881	65	63	65	71	70	69	67	69	67	70	51	64	66
1882	70	63	65	72	66	68	67	66	67	63	59	55	65
1883	53	61	80	68	72	72	73	71	67	69	60	64	67
1884	62	71	76	79	76	76	72	73	72	72	71	77	73
1885	65	66	66	70	75	69	71	70	76	78	78	72	71
1886	78	76	81	80	74	76	73	77	82	80	67	79	77
1887	66	82	78	79	73	78	83	81	82	73	78	74	77
1888	80	83	78	75	79	74	76	79	78	82	74	71	78
1889	60	54	77	78	74	78	74	73	64	75	58	85	71
1890	70	66	64	76	73	66	69	73	72	61	40	56	65
1891	48	70	70	72	78	73	73	75	69	75	73	58	70
1892	60	80	79	71	75	72	76	74	79	69	64	72	73
1893	69	73	79	71	75	74	76	77	77	73	74	63	73
1894	70	68	70	74	80	74	76	78	73	75	84	77	75
1895	76	69	77	74	76	73	80	80	68	82	60	57	73
1896	71	58	70	67	67	73	79	77	76	77	72	66	71
1897	68	74	74	73	82	77	78	74	76	73	60	53	72
1898	65	71	62	68	77	76	75	71	68	72	57	52	68
1899	65	68	72	76	76	81	76	77	75	72	73	61	73
1900	75	63	73	73	78	79	74	76	68	78	57	55	71
Averages	66	69	73	73	74	73	74	74	72	71	64	65	71

HIGHEST AND LOWEST MEAN RELATIVE HUMIDITY (PER CENT).

Year.	Jan.		Feb.		Mar.		Apr.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
1877	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	78	42	78	51	77	31	78	46	78	17	85	14
1878	90	29	92	40	84	48	80	49	79	53	77	63	75	61	75	57	76	14	79	24	86	27	89	16
1879	84	24	88	50	83	24	85	23	75	15	75	21	76	62	76	47	79	23	81	16	86	25	89	21
1880	85	38	82	45	85	59	89	57	84	35	82	49	80	64	83	56	83	20	85	18	80	11	87	34
1881	87	38	85	27	85	43	92	49	84	57	75	56	94	51	77	48	76	49	86	59	75	34	78	40
1882	86	57	85	46	91	36	91	56	83	43	74	59	81	55	78	51	89	52	88	26	84	28	89	27
1883	79	28	95	30	95	45	86	26	82	28	81	55	77	65	79	57	82	28	84	48	81	23	95	34
1884	95	25	94	36	93	51	95	64	87	67	90	56	80	63	80	42	86	50	89	28	85	37	95	47
1885	89	30	87	29	81	25	86	36	82	67	78	52	78	55	82	48	90	27	87	54	93	42	91	42
1886	95	39	92	46	90	67	92	66	84	66	84	66	84	56	82	66	87	71	90	66	86	42	94	56
1887	86	43	92	58	94	43	92	48	84	48	84	61	89	70	88	65	89	73	90	43	90	52	96	46
1888	98	48	93	61	94	47	88	31	88	68	84	57	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

The following table shows the actual and possible number of hours of sunshine and percentages of each month at Los Angeles, Cal., from October, 1896, to December, 1900, inclusive. The record is derived from the Weather Bureau photographic sunshine recorder, which forms a portion of the standard equipment of instruments at the Los Angeles Station.

TOTAL NUMBER OF HOURS OF ACTUAL SUNSHINE.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Monthly average.
1896	.....	.....	.....	.....	.....	.....	.....	.....	.....	271	226	222	.....
1897	209	198	261	314	216	327	332	344	291	246	274	262	273
1898	205	216	290	292	278	294	365	354	308	294	287	226	284
1899	238	260	240	289	287	289	370	324	289	258	214	214	273
1900	204	255	229	242	308	282	331	286	297	254	239	275	267

TOTAL NUMBER OF HOURS OF POSSIBLE SUNSHINE.

All years	316	307	372	392	433	432	440	416	372	351	312	308	371

PERCENTAGE OF SUNSHINE.

1896	.....	.....	.....	.....	.....	.....	.....	.....	.....	77	72	72	.....
1897	66	65	70	80	50	76	75	83	78	70	88	85	74
1898	65	70	78	74	64	68	83	85	81	84	92	73	77
1899	75	85	65	74	66	67	84	78	78	73	69	70	74
1900	64	83	61	62	71	65	75	69	80	72	77	89	72

NUMBER OF CLEAR, PARTLY CLOUDY, AND CLOUDY DAYS.

Year.	January.			February.			March.			April.			May.			June.		
	Clear.	Partly cloudy.	Cloudy.	Clear.	Partly cloudy.	Cloudy.	Clear.	Partly cloudy.	Cloudy.	Clear.	Partly cloudy.	Cloudy.	Clear.	Partly cloudy.	Cloudy.	Clear.	Partly cloudy.	Cloudy.
1878	13	10	8	13	6	9	7	18	6	8	13	9	11	10	10	3	15	12
1879	16	10	5	6	13	9	16	5	10	13	12	5	22	9	0	3	24	3
1880	20	10	1	16	8	5	16	10	5	8	10	12	15	11	5	7	22	1
1881	17	9	5	14	12	2	15	13	3	6	13	11	9	15	7	12	16	2
1882	18	6	7	16	9	3	15	5	11	16	9	5	12	11	8	11	14	5
1883	21	6	4	13	9	6	6	14	11	10	18	2	12	15	4	15	12	3
1884	17	8	6	11	8	10	9	11	11	11	13	6	7	16	8	8	9	13
1885	a17	a10	a3	16	11	1	14	12	5	11	12	7	4	21	6	15	14	1
1886	13	6	12	20	4	4	14	11	6	13	10	7	14	14	3	a10	a16	a3
1887	21	10	0	13	9	6	18	12	1	11	10	9	a14	a11	a5	17	10	3
1888	14	8	9	14	8	7	10	12	9	14	8	8	5	18	8	17	12	1
1889	19	6	6	18	8	2	9	18	4	12	13	5	9	19	3	1	28	1
1890	10	13	8	15	9	4	18	13	5	6	20	4	5	18	8	9	21	0
1891	18	11	2	10	7	11	14	10	7	10	13	7	4	20	7	15	14	1
1892	14	9	8	6	10	13	11	17	3	17	11	2	10	6	15	12	17	1
1893	17	7	7	13	10	5	8	13	10	19	9	2	10	14	7	16	14	0
1894	21	6	4	11	14	3	12	11	8	10	14	6	5	20	6	10	20	0
1895	13	14	4	13	9	6	11	9	11	10	10	10	9	19	3	9	21	0
1896	9	14	8	21	5	3	9	15	7	11	16	3	14	16	1	9	21	0
1897	13	13	5	11	11	6	11	13	7	16	12	2	2	22	7	10	20	0
1898	12	10	9	11	12	5	15	14	2	15	12	3	8	18	5	6	22	2
1899	16	8	7	14	12	2	8	18	5	7	22	1	8	19	4	7	20	3
1900	10	14	7	15	13	0	11	10	10	11	15	4	12	16	3	9	18	3
Averages	16	9	6	13	9	6	12	12	7	12	12	6	10	15	6	10	17	3

Year.	July.			August.			September.			October.			November.			December.			Annual.		
	Clear.	Partly cloudy.	Cloudy.	Clear.	Partly cloudy.	Cloudy.	Clear.	Partly cloudy.	Cloudy.	Clear.	Partly cloudy.	Cloudy.	Clear.	Partly cloudy.	Cloudy.	Clear.	Partly cloudy.	Cloudy.	Clear.	Partly cloudy.	Cloudy.
1877	19	11	1	22	8	1	16	11	3	18	11	2	22	7	1	18	7	6	.....	.....	.....
1878	5	26	0	10	19	2	15	14	1	17	13	1	17	11	2	22	4	5	141	159	65
1879	13	8	0	17	14	0	18	12	0	19	9	3	17	10	3	13	10	8	178	146	46
1880	5	23	3	12	16	3	6	23	0	9	16	6	17	12	1	10	10	11	141	171	54
1881	11	19	1	12	18	1	17	11	2	19	9	3	25	5	0	15	14	2	172	154	39
1882	9	22	0	a16	a6	a1	26	2	2	20	9	2	16	8	6	22	8	1	a197	a109	a51
1883	11	19	1	20	10	1	22	8	0	13	14	4	18	11	1	22	7	2	183	43	39
1884	24	7	0	23	8	0	20	8	2	25	4	2	21	7	2	a13	a11	a6	189	110	66
1885	14	16	1	16	14	1	18	12	0	21	10	0	14	8	8	21	5	5	a181	a145	a38
1886	15	14	2	21	8	2	15	15	0	15	14	2	22	7	1	18	12	1	a190	a131	a43
1887	13	13	5	11	20	0	15	12	3	24	6	1	18	9	3	21	7	3	a196	a129	a39
1888	17	13	1	23	8	0	21	7	2	16	10	5	15	8	7	18	6	7	184	118	64
1889	15	16	0	14	16	1	11	18	1	6	20	5	18	8	4	8	11	12	140	181	44
1890	20	11	0	10	20	1	12	12	6	25	2	4	25	4	1	13	12	6	163	155	47
1891	8	23	0	9	22	0	17	13	0	10	20	1	20	10	0	19	9	3	154	172	39
1892	9	22	0	12	19	0	20	10	0	12	13	6	21	4	5	18	8	5	162	146	58
1893	13	18	0	10	21	0	12	17	1	15	12	4	12	15	3	16	10	5	161	160	44
1894	13	16	2	9	22	0	12	18	0	13	16	2	18	12	0	9	8	14	143	177	45
1895	3	28	0	6	25	0	12	17	1	12	18	1	22	5	3	22	7	2	142	172	51
1896	9	19	3	8	21	2	8	22	0	15	14	2	14	12	4	15	12	4	142	187	37
1897	6	25	0	12	19	0	10	20	0	15	11	5	19	10	1	20	9	2	145	185	35
1898	12	19	0	12	19	0	19	10	1	18	13	0	18	10	2	14	13	4	160	172	33
1899	28	3	0	20	10	1	20	8	2	13	15	3	8	19	3	13	13	5	162	167	36
1900	8	23	0	8	22	1	18	9	3	14	12	5	15	9	6	21	9	1	152	170	43
Averages	12	18	1	14	16	1	16	13	1	16	12	3	18	9	3	17	9	5	166	151	48

a Record incomplete.

NUMBER OF DAYS WITH FROST.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1877	.....	.....	.....	.....	.....	.....	0	0	0	0	0	2
1878	4	0	0	0	0	0	0	0	0	0	2	8
1879	4	0	0	0	0	0	0	0	0	0	2	5
1880	6	7	3	1	0	0	0	0	0	0	1	1
1881	5	0	2	0	0	0	0	0	0	1	1	0
1882	1	3	0	0	0	0	0	0	0	0	1	3
1883	7	11	0	1	0	0	0	0	0	0	1	7
1884	11	3	4	0	0	0	0	0	0	0	0	3
1885	4	0	0	0	0	0	0	0	0	0	2	9
1886	7	0	4	0	0	0	0	0	0	7	11	2
1887	7	6	0	0	0	0	0	0	0	0	4	12
1888	3	0	1	0	0	0	0	0	0	0	3	4
1889	13	3	0	0	0	0	0	0	0	0	3	6
1890	9	3	0	0	0	0	0	0	0	1	1	3
1891	10	2	0	0	0	0	0	0	0	0	0	9
1892	3	0	2	2	0	0	0	0	0	0	1	10
1893	4	0	3	0	0	0	0	0	0	0	0	3
1894	14	9	6	0	0	0	0	0	0	0	3	7
1895	10	2	6	0	0	0	0	0	0	0	4	12
1896	3	7	4	3	0	0	0	0	0	1	3	5
1897	9	6	3	0	0	0	0	0	0	0	3	19
1898	13	3	13	1	0	0	0	0	0	0	1	19
1899	7	10	0	0	0	0	0	0	0	0	3	13
1900	10	9	2	0	0	0	0	0	0	0	0	3

NUMBER OF DAYS WITH THUNDER STORMS.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877	.....	.....	.....	.....	.....	.....	0	0	0	0	0	0	0
1878	0	0	0	0	0	0	0	0	0	0	0	0	0
1879	0	0	0	0	0	0	0	0	0	0	0	0	0
1880	0	0	0	0	0	0	0	0	0	0	0	0	0
1881	0	0	0	0	0	0	0	0	0	0	0	0	0
1882	0	0	0	0	0	0	0	0	0	0	0	0	0
1883	0	0	0	0	0	0	0	0	0	0	0	0	0
1884	0	1	1	1	0	1	0	0	0	1	0	0	5
1885	0	0	0	1	0	0	0	0	0	0	0	0	1
1886	1	0	1	0	0	0	1	0	0	0	0	0	3
1887	0	1	0	0	1	0	0	0	0	0	0	0	2
1888	0	0	1	0	0	0	0	1	0	0	0	0	2
1889	0	0	3	0	1	0	0	0	0	0	0	0	4
1890	0	0	0	0	0	0	0	0	0	0	0	0	0
1891	0	0	0	0	0	0	0	0	0	0	0	0	0
1892	0	0	0	0	0	0	0	0	0	0	0	0	0
1893	0	0	0	0	1	0	0	0	0	0	0	1	2
1894	0	0	0	0	0	0	0	1	0	0	0	0	1
1895	1	0	0	0	0	0	0	0	0	0	0	0	1
1896	0	0	0	1	1	0	0	0	0	0	0	0	2
1897	2	0	0	1	0	0	0	1	0	0	0	0	4
1898	0	0	0	0	0	0	0	0	0	0	0	0	0
1899	1	0	0	0	0	0	0	0	1	0	0	0	2
1900	0	0	1	0	0	0	0	0	1	0	1	0	3

Number of Days with 0.01 Inch or More Rainfall.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877	.....	.....	.....	.....	.....	.....	0	0	0	2	1	0	3
1878	7	10	9	7	10	4	0	0	0	3	0	4	54
1879	9	7	6	6	2	2	0	0	0	3	3	10	48
1880	5	8	6	13	1	0	0	0	0	2	3	13	51
1881	3	4	5	4	1	0	0	0	0	3	2	2	24
1882	6	5	10	6	3	0	0	0	0	4	3	2	39
1883	3	4	7	3	0	2	0	0	0	2	0	6	33
1884	5	14	18	9	4	6	0	0	0	2	3	10	71
1885	2	0	1	8	1	0	0	0	0	1	9	4	26
1886	10	2	8	4	0	1	1	1	0	1	1	3	32
1887	2	13	2	5	3	1	2	0	1	1	3	1	37
1888	9	5	11	3	1	0	1	1	0	3	3	6	48
1889	4	5	7	4	3	0	0	1	1	7	4	20	56
1890	9	4	5	2	2	1	0	1	3	2	2	7	38
1891	1	12	4	3	2	0	0	0	1	0	0	4	27
1892	6	11	6	1	5	2	0	1	0	4	6	6	48
1893	7	5	12	1	1	1	0	0	0	4	3	6	40
1894	5	3	3	2	3	0	0	1	2	1	0	10	30
1895	10	5	6	5	4	1	0	0	0	2	5	4	42
1896	9	0	6	4	2	0	1	1	0	3	5	5	36
1897	9	9	7	1	3	0	0	0	0	3	1	2	35
1898	6	4	4	1	2	0	1	0	2	2	0	3	25
1899	4	3	5	2	1	2	0	1	0	4	5	4	31
1900	2	0	2	5	4	0	0	0	0	3	7	0	23
Average	6	6	7	4	3	1	0	0	0	3	3	6	39

Monthly Precipitation (Inches and Hundredths).

1877	.....	.....	.....	.....	.....	.....	0.00	0.00	0.00	0.86	0.45	3.93	5.24
1878	3.33	7.68	2.57	1.71	0.66	0.07	0.00	T.	0.00	0.14	T.	4.70	20.86
1879	3.59	0.97	0.49	1.19	0.24	0.03	0.00	0.00	0.00	0.93	3.44	6.53	17.41
1880	1.33	1.56	1.45	5.06	0.04	0.00	T.	T.	0.00	0.14	0.67	8.40	18.65
1881	1.43	0.36	1.66	0.46	0.01	0.00	0.00	T.	T.	0.82	0.27	0.52	5.53
1882	1.01	2.66	2.66	1.83	0.63	T.	0.00	0.00	T.	0.05	1.82	0.08	10.74
1883	1.62	3.47	2.87	0.15	2.02	0.03	T.	0.00	0.00	1.42	0.00	2.56	14.14
1884	3.15	13.37	12.36	3.54	0.34	1.39	T.	T.	T.	0.30	1.06	4.64	40.15
1885	1.05	T.	0.01	2.00	0.06	T.	T.	T.	T.	0.26	5.52	1.63	10.53
1886	7.72	1.38	2.50	3.29	0.00	0.01	0.24	0.21	0.00	0.01	1.18	0.18	16.72
1887	0.20	9.25	0.24	2.30	0.20	0.04	0.07	0.00	0.15	0.12	0.78	2.67	16.02
1888	6.03	0.77	3.15	0.11	0.02	T.	0.03	0.08	T.	0.36	4.01	6.26	21.04
1889	0.25	0.92	6.48	0.27	0.62	0.00	0.00	0.61	0.00	6.95	1.35	15.80	33.25
1890	7.83	1.36	0.66	0.22	0.03	0.02	0.00	0.03	0.06	0.03	0.13	2.32	12.69
1891	0.25	8.56	0.41	0.26	0.31	0.00	T.	0.00	0.06	0.00	0.00	1.99	12.84
1892	0.88	3.19	3.39	0.22	2.06	0.06	0.00	0.01	0.00	0.33	4.40	4.18	18.72
1893	6.29	2.27	8.52	0.19	0.06	0.03	0.00	0.00	T.	0.75	0.20	3.65	21.96
1894	0.94	0.49	0.37	0.13	0.20	T.	T.	0.01	0.73	0.02	0.00	4.62	7.51
1895	5.84	0.46	3.77	0.46	0.19	0.01	T.	T.	T.	0.24	0.80	0.78	12.55
1896	3.23	T.	2.97	0.19	3.30	T.	0.02	0.01	T.	1.30	1.66	2.12	11.80
1897	3.70	5.62	2.31	0.02	0.10	T.	T.	0.00	0.00	2.47	0.01	0.05	14.28
1898	1.26	0.51	0.98	0.03	1.75	T.	0.07	T.	0.02	0.09	T.	0.12	4.83
1899	2.64	0.04	1.81	0.18	0.04	0.58	0.00	0.01	T.	1.59	0.90	0.90	8.69
1900	1.17	T.	0.99	0.54	1.81	T.	T.	T.	T.	0.26	6.53	T.	11.30
Average	2.80	2.82	2.72	1.10	0.51	0.10	0.02	0.04	0.04	0.81	1.47	3.28	15.71

TOTAL PRECIPITATION AT LOS ANGELES, CAL., BY SEASONS.

Season.	Amount.	Season.	Amount.
	Inches.		*Inches.*
September 1, 1877, to September 1, 1878	20.26	September 1, 1889, to September 1, 1890	34.25
September 1, 1878, to September 1, 1879	11.35	September 1, 1890, to September 1, 1891	13.33
September 1, 1879, to September 1, 1880	20.84	September 1, 1891, to September 1, 1892	11.86
September 1, 1880, to September 1, 1881	18.13	September 1, 1892, to September 1, 1893	26.27
September 1, 1881, to September 1, 1882	10.40	September 1, 1893, to September 1, 1894	6.74
September 1, 1882, to September 1, 1883	12.11	September 1, 1894, to September 1, 1895	16.10
September 1, 1883, to September 1, 1884	38.13	September 1, 1895, to September 1, 1896	8.54
September 1, 1884, to September 1, 1885	9.12	September 1, 1896, to September 1, 1897	16.83
September 1, 1885, to September 1, 1886	22.76	September 1, 1897, to September 1, 1898	7.13
September 1, 1886, to September 1, 1887	13.67	September 1, 1898, to September 1, 1899	5.53
September 1, 1887, to September 1, 1888	13.91	September 1, 1899, to September 1, 1900	7.90
September 1, 1888, to September 1, 1889	19.78		

GREATEST PRECIPITATION (INCHES AND HUNDREDTHS) IN 24 HOURS.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1877							0.00	0.00	0.00	0.84	0.45	2.21
1878	1.16	1.33	0.90	0.47	0.26	0.04	0.00	0.00	0.00	0.13	0.00	3.58
1879	1.41	0.63	0.36	0.63	0.20	0.03	0.00	0.00	0.00	0.93	3.41	4.34
1880	0.68	0.57	0.75	1.43	0.04	0.00	T.	T.	0.00	0.12	0.56	2.26
1881	1.27	0.19	0.76	0.37	0.01	0.00	0.00	T.	T.	0.59	0.21	0.34
1882	0.53	1.02	1.24	1.18	0.61	T.	0.00	0.00	T.	0.02	1.77	0.05
1883	1.55	2.04	1.67	0.08	1.53	0.02	T.	0.00	0.00	1.37	0.00	1.56
1884	1.36	3.63	3.18	2.20	0.22	0.87	0.01	0.01	T.	0.17	1.01	3.04
1885	0.89	0.01	0.01	0.83	0.06	T.	T.	T.	0.01	0.26	1.80	1.02
1886	3.77	1.32	0.89	1.97	0.01	0.02	0.24	0.21	0.02	0.01	1.18	0.13
1887	0.20	3.94	0.23	1.05	0.17	0.04	0.05	T.	0.15	0.12	0.70	1.86
1888	3.39	0.30	1.51	0.08	0.02	0.01	0.03	0.08	0.01	0.30	2.02	2.72
1889	0.18	0.81	2.53	0.15	0.35	0.01	T.	0.61	0.00	3.62	0.73	4.30
1890	4.17	0.70	0.30	0.21	0.02	0.02	0.00	0.03	0.04	0.03	0.13	1.20
1891	0.25	2.75	0.22	0.85	0.30	0.00	T.	0.00	0.06	0.00	0.00	1.04
1892	0.49	1.48	1.96	0.22	1.76	0.05	0.00	0.01	0.00	0.30	3.75	2.35
1893	3.29	1.33	2.51	0.19	0.06	0.03	0.00	0.00	T.	0.39	0.14	1.82
1894	0.38	0.24	0.35	0.07	0.09	T.	T.	0.01	0.71	0.02	0.00	1.33
1895	1.81	0.26	2.25	0.29	0.13	0.01	T.	T.	T.	0.20	0.40	0.45
1896	1.73	T.	1.33	0.07	0.29	T.	0.02	0.01	T.	1.29	1.14	1.22
1897	1.57	2.13	0.81	0.02	0.06	T.	T.	0.00	0.00	1.75	0.01	0.03
1898	0.41	0.28	0.50	0.03	1.46	T.	0.07	T.	0.01	0.08	T.	0.11
1899	1.70	0.02	0.84	0.10	0.04	0.57	0.00	0.01	T.	1.09	0.53	0.84
1900	1.16	T.	0.90	0.38	1.32	T.	T.	T.	T.	0.25	3.79	T.

Prevailing Wind Direction.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877	.....	.....	.....	.....	.....	.....	W.	W.	W.	W.	N.	N.	W.
1878	N.	NE.	N.	SW.	SW.	SW.	W.	W.	W.	W.	N.	NE.	W.
1879	NE.	NE.	SW.	SW.	SW.	W.	W.	W.	W.	NE.	NE.	NE.	NE.
1880	N.	NE.	NE.	SW.	SW.	SW.	SW.	SW.	SW.	SW.	NE.	NE.	SW.
1881	NE.	NE.	NE.	W.	W.	W.	W.	W.	W.	W.	SW.	W.	W.
1882	NE.	NE.	W.	W.	W.	W.	W.	W.	W.	W.	NE.	NE.	W.
1883	NE.	NE.	W.	W.	W.	W.	W.	W.	W.	W.	NE.	NE.	W.
1884	NE.	NE.	NE.	W.	W.	W.	W.	W.	W.	W.	W.	NE.	W.
1885	NE.	NE.	W.	W.	W.	W.	W.	W.	W.	W.	W.	NE.	W.
1886	E.	NE.	W.	W.	W.	W.	W.	W.	W.	W.	NE.	NE.	W.
1887	NE.	SE.	W.	W.	W.	W.	W.	W.	W.	W.	W.	NE.	W.
1888	E.	W.	W.	W.	W.	W.	W.	W.	W.	W.	NE.	W.	W.
1889	W.	W.	W.	W.	W.	W.	W.	W.	W.	W.	N.	NE.	W.
1890	NE.	N.	W.	W.	W.	W.	W.	W.	W.	W.	W.	N.	W.
1891	W.	W.	W.	W.	W.	W.	W.	W.	W.	W.	W.	N.	W.
1892	NE.	W.	W.	W.	W.	W.	W.	W.	W.	W.	W.	W.	W.
1893	NW.	NE.	NE.	W.	W.	W.	W.	W.	W.	W.	W.	NE.	W.
1894	W.	W.	W.	W.	W.	W.	W.	W.	W.	W.	W.	E.	W.
1895	E.	NE.	W.	W.	W.	W.	W.	W.	W.	W.	NE.	NW.	W.
1896	W.	NE.	W.	W.	W.	W.	W.	W.	W.	W.	W.	NE.	W.
1897	NE.	W.	SW.	W.	W.	SW.	W.	W.	W.	W.	W.	W.	W.
1898	NE.	W.	W.	W.	W.	W.	W.	SW.	W.	W.	W.	W.	W.
1899	W.	W.	W.	W.	SW.	SW.	W.	W.	W.	W.	W.	N.	W.
1900	W.	W.	W.	W.	W.	W.	W.	SW.	W.	W.	W.	NE.	W.
Average	NE.	NE.	W.	W.	W.	W.	W.	W.	W.	W.	W.	NE.	W.

Highest Velocity of Wind (Miles per Hour) and Direction.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1877	.....	.....	.....	.....	.....	.....	13 SW.	16 W.	12 W.	24 N.	24 N.	24 NE.
1878	26 NW.	25 W.	20 NE.	25 SW.	16 SW.	15 SW.	15 W.	15 W.	16 W.	14 W.	21 NW.	23 E.
1879	29 E.	17 W.	22 W.	23 W.	21 W.	17 W.	14 W.	14 W.	15 W.	23 W.	24 NW.	27 SE.
1880	21 NE.	26 NW.	17 N.	23 SW.	19 SW.	14 SW.	22 S.	19 SW.	14 W.	16 SW.	17 NE.	22 NW.
1881	17 SW.	33 NW.	46 SW.	24 S.	19 SW.	20 W.	19 SW.	21 W.	24 W.	24 NW.	43 NE.	26 S.
1882	48 NE.	30 NW.	30 E.	30 N.	26 W.	18 W.	18 W.	17 W.	28 W.	28 NW.	20 E.	28 N.
1883	34 E.	28 NW.	22 W.	42 W.	24 E.	21 W.	16 W.	17 W.	20 W.	26 W.	16 W.	28 NW.
1884	24 SW.	40 W.	30 NW.	24 W.	18 W.	20 W.	18 W.	20 W.	18 W.	24 NW.	14 NW.	34 NE.
1885	20 NW.	26 NW.	20 W.	28 W.	23 W.	21 NW.	20 W.	22 W.	18 W.	17 W.	26 E.	36 N.
1886	37 W.	29 W.	25 W.	28 SE.	20 W.	17 W.	22 N.	18 W.	16 W.	24 W.	30 W.	20 NW.
1887	24 NW.	32 NW.	18 W.	37 W.	30 NW.	20 W.	20 W.	18 W.	23 W.	34 NE.	18 W.	37 E.
1888	33 N.	23 NE.	30 E.	28 W.	24 W.	19 W.	21 W.	18 W.	23 W.	18 SW.	18 NE.	26 E.
1889	17 N.	24 W.	24 E.	24 NW.	23 W.	14 SW.	14 W.	13 W.	15 W.	20 E.	22 N.	20 E.
1890	17 E.	18 W.	24 NW.	19 NW.	15 W.	18 W.	13 W.	14 W.	15 S.	15 W.	14 W.	18 W.
1891	19 NW.	24 E.	24 W.	16 E.	18 W.	16 W.	15 W.	13 W.	20 NW.	16 W.	12 W.	28 N.
1892	17 E.	17 E.	21 W.	23 W.	20 W.	24 W.	13 W.	13 SW.	14 W.	16 SW.	21 N.	24 NE.
1893	23 E.	28 N.	24 E.	28 N.	14 W.	14 W.	14 W.	16 W.	13 W.	17 E.	18 E.	25 E.
1894	14 W.	25 NW.	30 N.	24 NW.	18 W.	18 W.	15 W.	17 SE.	18 W.	13 W.	12 W.	23 W.
1895	18 SW.	19 NW.	20 NW.	26 NW.	26 W.	15 W.	14 W.	12 W.	14 NW.	14 W.	12 E.	18 E.
1896	20 NW.	22 NW.	21 NW.	24 W.	15 W.	13 SW.	15 W.	15 W.	15 W.	24 W.	20 NW.	16 E.
1897	34 E.	24 SW.	22 NW.	24 W.	20 N.	20 SW.	15 W.	15 W.	15 S.	20 NW.	16 W.	24 NW.
1898	24 E.	17 W.	24 NW.	20 W.	15 W.	15 W.	15 W.	13 SW.	17 W.	20 W.	24 NE.	22 NW.
1899	30 E.	20 SW.	24 SW.	20 SW.	23 NW.	15 SW.	16 W.	13 W.	12 W.	20 SW.	16 NW.	16 NW.
1900	23 NW.	18 N.	14 W.	22 W.	22 W.	14 SW.	17 W.	15 W.	18 S.	21 W.	20 SE.	14 NW.

Average Daily Wind Movement (Miles per Hour).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1877	.....	.....	.....	.....	.....	.....	104	94	108	111	112	120
1878	126	141	119	114	112	105	106	98	101	92	110	126
1879	133	193	104	127	135	119	106	99	92	114	102	109
1880	104	128	117	136	113	106	109	102	90	78	64	78
1881	105	159	136	126	140	141	137	128	131	124	175	132
1882	152	139	143	93	125	138	134	131	130	138	131	141
1883	178	161	124	171	157	130	131	127	126	147	133	142
1884	167	189	183	150	130	128	102	119	119	120	110	140
1885	136	135	115	144	103	125	102	100	85	81	157	159
1886	169	143	147	151	138	126	130	121	112	132	149	118
1887	142	189	123	136	152	148	128	130	125	136	122	154
1888	142	121	149	138	138	136	133	124	117	110	71	87
1889	76	86	96	88	100	88	83	82	87	98	87	96
1890	95	85	100	83	86	91	81	84	77	75	90	88
1891	97	117	98	91	94	91	84	83	84	67	66	113
1892	77	78	92	98	95	93	82	79	73	74	75	89
1893	77	95	102	101	98	88	90	87	90	84	79	86
1894	81	100	101	101	99	105	85	88	83	68	49	86
1895	92	81	86	91	95	89	77	68	79	74	73	82
1896	84	87	90	111	98	83	88	85	97	88	94	87
1897	110	125	128	110	101	112	106	103	101	94	88	94
1898	117	92	121	113	111	104	107	100	91	80	91	97
1899	85	107	121	113	110	107	102	100	84	106	86	81
1900	76	92	90	120	116	113	120	113	111	98	99	88
Average	114	124	116	118	115	111	106	102	100	99	100	108

Average Hourly Wind Velocity (Miles per Hour).

1885	5.7	5.6	4.8	6.0	4.3	5.2	4.2	4.1	3.6	3.4	6.5	6.6
1886	7.0	6.0	6.1	6.3	5.8	5.3	5.4	5.1	4.7	5.5	6.2	4.9
1887	5.9	7.9	5.1	5.6	6.3	6.2	5.3	5.4	5.2	5.7	5.1	6.4
1888	5.9	5.0	6.2	5.8	5.7	5.7	5.6	5.2	4.9	4.6	2.9	3.6
1889	3.2	3.6	4.0	3.6	4.1	3.7	3.4	3.4	3.6	3.9	3.6	4.0
1890	4.0	3.5	4.2	3.4	3.6	3.8	3.4	3.5	3.2	3.1	3.7	3.7
1891	4.1	4.9	4.1	3.8	3.9	3.8	3.5	3.5	3.5	2.8	2.8	4.7
1892	3.2	3.2	3.8	4.1	3.9	3.9	3.4	3.3	3.0	3.1	3.1	3.7
1893	3.2	4.0	4.2	4.2	4.1	3.7	3.7	3.6	3.7	3.5	3.3	3.6
1894	3.4	4.2	4.2	4.2	4.1	4.4	3.5	3.6	3.5	2.8	2.1	3.6
1895	3.9	3.4	3.6	3.8	4.0	3.7	3.2	2.8	3.3	3.1	3.1	3.4
1896	3.5	3.6	3.8	4.6	4.1	3.4	3.6	3.6	4.0	3.7	3.9	3.6
1897	4.6	5.2	5.3	4.6	4.2	4.7	4.4	4.3	4.2	3.9	3.7	3.9
1898	4.9	3.9	5.1	4.7	4.6	4.3	4.5	4.2	3.8	3.3	3.8	4.0
1899	3.6	4.5	5.1	4.7	4.6	4.5	4.3	4.2	3.5	4.4	3.6	3.4
1900	3.2	3.8	3.8	5.0	4.8	4.7	5.0	4.7	4.6	4.1	4.1	3.7
Average	4.3	4.5	4.6	4.6	4.5	4.4	4.1	4.0	3.9	3.8	3.8	4.2

Monthly, Seasonal, and Annual Summaries.

	Temperature.									Precipitation.						
	Mean.					Absolute maximum.		Absolute minimum.								
	Monthly.	Warmest month.	Year.	Coldest month.	Year.		Year.		Year	Mean monthly.	Greatest monthly.	Year.	Least monthly.	Year.	Greatest in any consecutive 24 hours.	Year.
January	54	58	1900	49	1890	87	1896	30	1883	2.80	7.83	1890	0.20	1887	4.17	1890
February	55	60	1886	51	1880	88	1896	28	1883	2.82	13.37	1884	T.	1896	3.94	1887
March	57	62	1885	52	1880	99	1879	31	1893	2.72	12.36	1884	0.01	1885	3.18	1884
April	60	63	1885	56	1896	99	1898	38	1896	1.10	5.06	1880	0.02	1897	2.20	1884
May	63	66	1885	60	1899	103	1896	40	1883	0.51	2.06	1892	0.00	1886	1.76	1892
June	67	71	1883	63	1894	105	1890	46	1894	0.10	1.39	1884	0.00	.....	0.87	1884
July	71	74	1891	65	1880	109	1891	49	1888	0.02	0.24	1886	0.00	.....	0.24	1886
August	72	75	1885	68	1900	106	1885	50	1883	0.04	0.61	1889	0.00	.....	0.61	1889
September	70	74	1888	66	1880	108	1885	44	1880	0.04	0.73	1894	0.00	.....	0.71	1894
October	64	68	1890	60	1886	102	1885	40	1892	0.81	6.95	1889	0.00	.....	3.62	1889
November	60	66	1900	56	1880	96	1890	34	1886	1.47	6.53	1900	0.00	.....	3.79	1900
December	56	61	1890	53	1891	89	1897	30	1897	3.28	15.80	1889	0.05	1897	4.34	1879
Annual	62	.....	.....	.....	.....	.....	.....	.....	.....	15.71	.....	.....	.....	.....	.....	.....
Winter	54	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spring	60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Summer	70	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fall	65	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

	Mean number of days—				Winds.						
	Clear.	Partly cloudy.	Cloudy.	0.01 inch or more rain.	Prevailing direction.	Highest velocity.	Direction.	Year.	Daily movement, miles p. h.	Hourly movement.	Average relative humidity.
January	16	9	6	6	N. E.	48	N. E.	1882	114	4.3	.....
February	13	9	6	6	N. E.	40	W.	1884	124	4.5	.....
March	12	12	7	7	W.	46	S. W.	1881	116	4.6	.....
April	12	12	6	4	W.	42	W.	1883	118	4.6	.....
May	10	15	6	3	W.	30	N. W.	1887	115	4.5	.....
June	10	17	3	1	W.	24	W.	1892	111	4.4	.....
July	12	18	1	0	W.	22	N.	1886	106	4.1	.....
August	14	16	1	0	W.	22	W.	1895	102	4.0	.....
September	16	13	1	0	W.	28	W.	1882	100	3.9	.....
October	16	12	3	3	W.	34	W.	1887	99	3.8	.....
November	18	9	3	3	W.	43	N. E.	1881	100	3.8	.....
December	17	9	5	6	N. E.	37	E.	1887	108	4.2	.....
Year	166	151	48	39	W.	.....	.....	.....	.....	.....	71
Winter	46	27	17	18	N. E.	.....	.....	.....	.....	.....	67
Spring	34	39	19	14	W.	.....	.....	.....	.....	.....	73
Summer	36	51	5	1	W.	.....	.....	.....	.....	.....	74
Fall	50	34	7	6	W.	.....	.....	.....	.....	.....	69

SAN DIEGO, CAL.

By Mr. FORD A. CARPENTER, Observer, Weather Bureau.

Four elements enter into a consideration of the climate of San Diego. Named according to their importance, they are as follows: (1) Distance from the northern storm tracks, and the southern storms of the lower California coast; (2) proximity to the ocean on the west; (3) the mountains in the east; and (4) the great Colorado Desert still farther east. The number of the northern areas of low pressure sufficiently great and moving far enough south to exert an influence at the latitude of San Diego are comparatively few; not one-tenth of these "lows" have an appreciable effect on the climate. The storms from the south ("Sonoras," as they are locally known) have but little energy, and probably average two a year. As is the case in all marine climates, the ocean exerts by far the most powerful effect. This is noticed in the slight daily variation in temperature and the absence of either cold or hot weather. The average daily change in temperature from day to day is 2 degrees, and the extremes in temperature from a record of thirty years are 101° and 32°. The temperature has exceeded 90° nineteen times in thirty years, or on an average of about twice every three years. Four times in the history of the station has the temperature touched 32°, but has never fallen lower. Four killing frosts have occurred in San Diego since the establishment of the station, but aside from blackening tender shoots and killing delicate flowers, no damage was done.

The desert winds are responsible for temperatures above 90°, and they are therefore accompanied by extremely low humidity. Records of humidity below 10 per cent are not uncommon during the two or three hours' duration of the desert wind. Three per cent is the lowest relative humidity ever recorded at this station. As the sea breeze is stronger than the desert wind, the highest point reached, whenever the temperature is above 90°, usually occurs about 11 a. m. At this time the sea breeze overcomes the land breeze and the temperature drops to the normal.

Nothing so clearly illustrates the strictly local character of the climate of San Diego as the humidity. While the mean annual relative humidity is 78 per cent at the Weather Bureau station, 2 miles north and at an increase of 200 feet in elevation, the humidity decreases 15 per cent. Five miles away, and at an elevation of 300 feet, there is a further decrease of 5 per cent. The temperature is of course proportionately higher.

The maximum amount of sunshine occurs in November and the minimum in May and June, the winters being usually bright and warm and the summers cloudy and cool. The photographic sunshine recorder was installed in 1890, and this ten years' record shows an average of four days each year without sunshine.

There is a difference of about 1 mile an hour in the average hourly velocity of the wind between the summer and the winter months; the mean annual hourly velocity is 5 miles. While the wind blows from every point of the compass during a normal day, the land breeze is very light, averaging about 3 miles per hour, reaching its lowest velocity just before the sea breeze starts in. The records show that there is an average velocity of from 6 to 9 miles from 10 a. m. to 6 p. m. During the summer a velocity of 6 miles is attained at 9 a. m., increasing to 10 miles at 2 p. m., reaching 6 miles at 7 p. m. The winter months have about five hours of wind over 6 miles, beginning shortly after noon. Winds from 25 to 30 miles per hour occur infrequently, the average annual number being two. Winds of from 31 to 40 miles have an average of less than one a year. The highest velocity ever attained was 40 miles from the northwest, in February, 1878.

The record of meteorological observations began in July, 1849, and was made entirely by officials of the Government. The Army and Coast Survey kept up the record until the establishment of this station by the Signal Service, November 1, 1871. Since this date the location of the observing office has been changed a number of times, but the different places have all been within a radius of a few blocks. The office is now in the Keating building, corner Fifth and F streets. The instruments have elevations as follows: Thermometer, 94 feet; rain gauge, 86 feet; anemometer, 102 feet.

MEAN MONTHLY AND ANNUAL TEMPERATURE (DEGREES FAHRENHEIT).

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1852	53.1	55.9	55.0	57.6	61.2	67.1	73.2	72.5	73.6	65.0	57.3	51.9	62.0
1853	53.8	53.0	57.7	62.6	63.3	68.4	72.8	72.9	70.7	68.8	60.4	56.2	63.4
1854	54.2	55.0	56.4	63.3	60.7	64.1	73.1	72.1	66.7	64.0	58.7	55.5	62.0
1855	52.6	56.2	58.4	62.3	64.0	68.8	70.9	72.0	68.3	66.6	56.4	52.4	62.4
1856	51.0	53.5	56.2	60.0	61.0	68.6	72.3	72.5	68.8	61.6	56.2	50.0	61.0
1857	52.4	53.6	58.8	62.6	64.4	69.1	67.3	72.8	68.4	63.9	57.2	51.8	61.9
1858	51.2	56.0	55.1	57.8	62.8	66.5	69.2	69.8	69.6	63.5	58.6	53.1	61.1
1859	54.5	54.8	55.3	56.2	60.1	67.0	69.7	68.4	66.6	65.1	60.1	55.3	61.1
1860	51.4	53.9	59.0	60.4	61.9	64.5	68.8	70.8	69.1	63.6	56.9	55.2	61.3
1861	51.4	56.5	57.7	63.8	65.7	67.6	73.1	72.3	69.3	64.6	59.8	58.1	63.3
1862	55.6	51.8	66.8	59.4	62.7	68.2	71.2	72.9	69.4	65.8	60.4	56.4	62.5
1863	52.8	52.8	59.9	61.0	62.6	64.6	68.0	68.1	68.9	65.7	59.0	55.8	61.6
1864	56.0	56.2	58.5	61.8	65.2	69.0	69.7	75.1	69.2	64.6	59.1	56.5	63.4
1865	55.6	54.7	57.8	59.8	64.3	65.7	67.7	71.8	68.2	65.2	62.1	52.2	62.1
1866	54.5	57.0	57.9	62.7	60.5	66.6	69.7	73.1	69.6	65.0	60.4	58.6	63.0
1867	55.2	53.2	55.4	61.7	63.6	69.1	70.5	74.5	71.7	64.0	63.2	63.3	63.8
1868	54.5	56.5	57.4	61.3	62.3	65.7	69.4	74.1	72.2	66.1	62.1	55.4	63.1
1869	56.6	55.6	59.8	62.1	62.2	64.4	68.8	70.3	68.3	66.3	61.1	50.6	62.2
1870	55.6	57.5	56.3	58.8	61.4	64.6	68.3	70.5	66.9	63.6	59.4	51.4	61.2
1871	53.5	52.2	56.7	57.7	63.6	65.1	71.4	72.1	68.3	65.6	58.3	56.8	61.8
1872	52.7	55.2	56.4	56.0	60.4	64.9	66.6	68.9	66.0	62.5	59.4	55.4	60.4
1873	56.7	53.3	56.7	58.0	60.0	62.7	67.0	69.0	67.7	62.0	60.3	54.3	60.0
1874	54.7	52.6	52.6	56.2	60.5	63.2	68.3	68.1	65.7	63.2	56.7	53.3	59.6
1875	53.4	54.6	55.0	57.8	62.6	64.6	68.3	71.2	67.7	67.2	60.3	56.9	61.6
1876	51.9	55.9	54.9	59.0	60.9	65.2	68.3	68.8	66.3	64.6	59.4	56.8	61.0
1877	57.4	57.9	58.9	58.3	60.3	66.3	68.4	68.4	68.0	63.9	60.6	56.8	62.1
1878	55.6	56.0	56.7	58.1	61.5	64.1	66.8	68.3	67.3	62.0	57.5	53.5	60.6
1879	52.3	54.8	57.9	53.1	60.1	64.1	65.7	68.6	66.6	62.6	56.2	53.9	60.1
1880	52.5	50.8	52.1	56.5	60.6	63.0	63.4	65.8	63.1	61.2	56.2	56.9	58.5
1881	52.8	55.7	54.3	60.8	62.3	64.1	67.2	68.2	66.7	61.5	56.8	55.0	60.4
1882	50.4	51.2	55.1	56.6	61.9	64.3	66.7	70.2	66.8	62.0	57.0	55.7	59.8
1883	53.4	53.9	57.4	57.4	60.6	66.6	68.7	68.9	69.7	61.7	58.7	57.5	61.2
1884	55.0	55.9	56.5	57.6	61.4	64.4	68 4	69.5	65.1	61.3	58.6	54.4	60.7
1885	54.0	55.4	59.6	62.0	63.3	64.3	67.6	71.8	68.0	63.9	59.6	57.1	62.0
1886	55.9	58.5	55.0	57.2	60.4	63.1	67.1	70.5	66.6	59.7	56.0	56.0	60.5
1887	54.3	52.9	57.2	59.0	62.1	64.6	66.5	66.2	65.7	64.5	59.2	54.6	60.6
1888	51.6	54.9	55.8	60.8	61.2	66.0	68.4	69.2	69.7	65.0	59.9	58.2	61.7
1889	54.8	58.0	59.2	60.4	60.8	64.0	67.6	70.8	70.2	65.4	62.0	57.4	62.6
1890	51.0	54.3	56.4	58.6	60.4	64.1	68.5	69.8	69.1	64.6	63.8	60.8	61.8
1891	54.6	53.3	56.9	58.2	60.8	65.6	69.0	72.4	70.2	63.8	59.2	61.5	62.0
1892	55.1	55.0	56.0	57.8	61.0	62.0	64.9	67.8	65.4	62.7	60.9	54.2	60.2
1893	57.4	54.4	54.2	57.5	61.0	63.4	67.4	70.0	64.6	62.7	57.6	57.4	60.6
1894	49.5	50.5	52.6	56.4	58.6	61.4	64.8	67.0	65.9	62.8	57.1	54.8	58.4
1895	53.2	55.8	55.4	57.8	61.9	65.0	65.6	61.7	67.4	64.4	59.4	55.0	60.5
1896	55.5	57.7	58.2	56.5	62.0	64.8	68.6	69.4	66.7	64.2	59.7	59.0	61.9
1897	55.8	54.7	54.2	59.8	60.9	63.4	67.0	69.9	68.1	62.4	60.2	55.0	61.0
1898	50.8	55.2	54.5	59.1	58.8	63.8	66.7	70.6	68.5	62.3	59.4	56.6	60.5
1899	55.5	53.4	56.4	58.2	57.7	61.4	65.6	65.8	65.5	62.7	60.8	58.7	60.1
1900	57.8	57.6	59.2	56.8	60.9	64.4	67.6	66.2	65.6	63.1	64.6	60.4	62.0
1901	56.2	57.5	60.0	57.4	60.0	62.5	65.8	68.2	64.8				
Mean (50 years)	53.9	54.8	56.5	59.1	61.6	65.1	67.2	70.0	68.0	63.9	59.2	55.6	61.4

MAXIMUM AND MINIMUM TEMPERATURES.

	Jan.		Feb.		Mar.		Apr.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
1872	73	37	68	44	71	44	74	43	83	52	80	55	75	58	85	60	80	54	87	45	81	42	72	40
1873	75	44	77	37	72	40	82	42	78	52	75	58	77	60	78	63	82	55	76	49	85	49	68	44
1874	71	42	64	41	63	41	71	43	74	50	76	52	79	59	83	56	78	54	90	46	75	45	82	39
1875	68	42	70	44	71	39	77	39	82	50	77	53	79	61	83	63	88	57	88	53	78	50	75	38
1876	65	39	77	39	75	43	87	43	76	50	88	51	78	60	81	60	82	54	80	48	79	43	77	43
1877	78	42	75	45	70	48	67	44	68	51	94	55	86	59	82	58	91	58	73	47	78	46	78	40
1878	68	38	69	44	68	42	77	44	73	48	76	51	77	56	80	55	100	53	87	44	77	40	79	35
1879	76	35	74	38	99	44	82	45	94	47	93	52	75	58	81	54	92	54	92	46	79	43	71	32
1880	73	34	63	35	69	38	80	42	84	46	73	52	73	54	84	56	82	50	81	48	78	40	77	40
1881	70	26	82	39	72	40	82	51	72	51	76	53	80	57	82	56	86	52	72	46	76	38	77	39
1882	64	34	70	37	79	39	70	43	73	48	75	55	78	57	83	62	80	50	81	49	80	42	78	41
1883	76	32	83	36	71	48	85	42	89	45	84	56	80	59	84	60	101	59	80	48	82	43	78	42
1884	78	39	79	38	68	43	69	45	72	47	81	50	84	54	92	54	78	51	87	47	74	42	68	36
1885	68	38	76	40	81	42	83	47	73	52	74	52	82	58	89	62	90	56	88	47	76	42	79	40
1886	74	35	80	44	68	41	71	45	72	50	75	54	81	57	82	61	78	60	75	47	77	40	76	40
1887	74	38	76	38	82	44	80	44	79	48	78	54	79	60	77	54	79	58	85	50	82	44	74	36
1888	64	33	67	42	72	41	93	47	70	52	76	54	77	55	82	57	82	58	80	53	75	46	73	44
1889	78	36	85	37	80	45	83	47	80	50	72	56	84	59	89	62	91	54	80	52	83	46	69	40
1890	66	35	77	38	74	41	85	45	75	46	93	51	80	56	89	58	88	60	90	49	91	46	79	47
1891	76	35	70	34	76	41	77	44	67	53	78	53	88	58	85	60	89	55	84	50	82	44	72	32
1892	75	38	68	42	73	44	80	41	87	47	75	51	75	57	80	57	80	54	83	46	84	40	71	36
1893	80	38	75	40	75	40	78	43	88	49	75	53	79	57	81	59	77	53	88	50	83	40	82	38
1894	69	32	69	34	72	36	83	43	72	45	73	50	77	57	90	55	90	52	87	45	78	45	70	41
1895	77	36	82	39	74	38	81	44	80	51	77	51	74	57	78	54	90	54	84	54	85	38	79	34
1896	77	39	83	39	85	41	74	42	98	48	89	54	80	56	88	59	80	54	79	52	76	43	78	46
1897	73	40	76	38	70	40	88	46	67	50	70	54	79	59	89	60	83	58	76	51	83	45	80	36
1898	78	36	75	42	77	38	86	45	69	51	88	54	77	60	83	63	91	56	81	51	76	43	79	43
1899	74	43	76	34	86	44	93	46	66	48	70	55	78	57	76	58	92	55	93	48	81	50	80	45
1900	79	46	76	45	80	46	67	45	75	49	87	56	84	60	80	59	87	53	72	50	89	51	79	44
1901	75	40	83	44	82	47	66	46	67	51	86	53	74	57	79	58	72	56	.....	.....	.....	.....	.....	.....

[From 1875 to 1900, 9,496 days, there were 9,181 days of temperature not above 80° nor below 40°.]

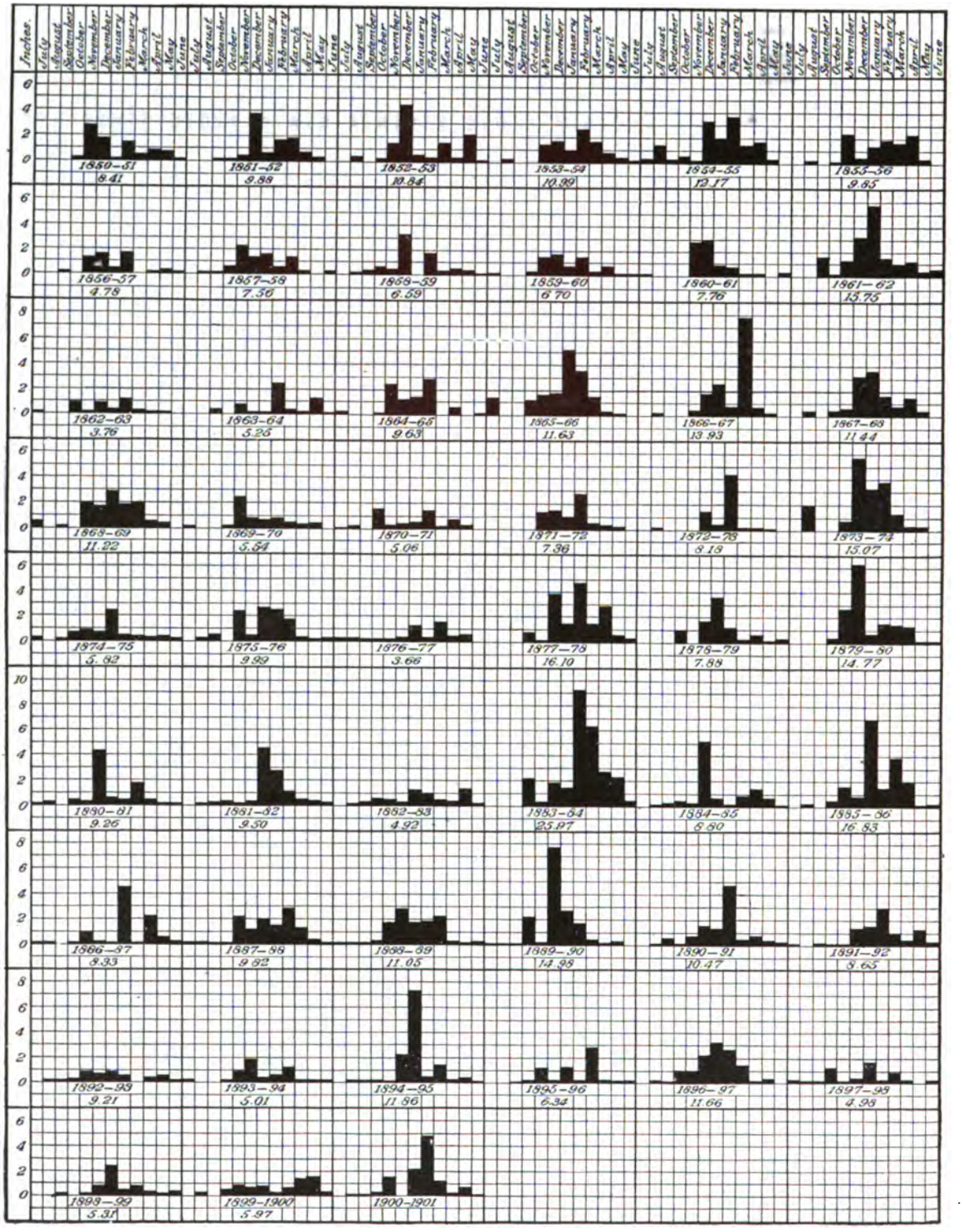

FIG. 10.—Seasonal rainfall at San Diego, Cal., from 1850 to 1901.

Mean Monthly Relative Humidity (Per Cent).

[Record began January 1, 1871.]

Month.	A. M.	P. M.	Average.	Month.	A. M.	P. M.	Average.	Month.	A. M.	P. M.	Average.
January	74.9	74.0	74.4	May	82.5	74.8	78.6	September	84.7	78.0	81.5
February	77.6	73.5	75.6	June	83.8	75.2	79.5	October	81.3	76.2	78.8
March	81.2	73.9	77.6	July	85.9	76.4	81.2	November	72.4	72.8	72.6
April	82.2	73.4	77.8	August	85.4	76.4	80.9	December	73.2	72.9	73.0

Number of High Winds in Twenty-eight Years.

[Record began January 1, 1873.]

Month.	Velocity.		Month.	Velocity.		Month.	Velocity.	
	25 to 30 miles.	21 to 40 miles.		25 to 30 miles.	21 to 40 miles.		25 to 30 miles.	21 to 40 miles.
January	8	11	June	0	1	November	5	3
February	8	9	July	3	0	December	10	5
March	9	8	August	1	2	Annual average	2	2
April	8	5	September	1	1			
May	2	2	October	3	1			

Summary of Monthly Means and Extremes of Temperature.

Month.	Highest monthly mean.		Lowest monthly mean.		Absolute maximum.		Absolute minimum.		Greatest daily range.	Mean daily range.	Mean variability.	Mean of three consecutive warmest days.	Mean of three consecutive coldest days.
	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.					
January	57.8	1900	49.5	1894	80.0	2, 1893	32.0	a 31, 1880	35.0	16.9	2.4	65.7	40.2
February	58.5	1886	50.5	1894	85.0	12, 1889	34.0	10–11, 1894	37.0	13.7	2.1	69.2	41.9
March	59.9	1863	52.1	1880	99.0	29, 1879	38.0	6, 1880 14, 1898	43.0	14.2	2.3	71.3	44.3
April	63.8	1861	51.7	1901	93.0	12, 1888	39.0	7, 1875	40.0	14.2	2.2	74.3	50.5
May	65.7	1861	57.7	1899	98.0	25, 1896	39.0	7, 1875	36.0	12.2	1.6	72.1	52.6
June	69.1	1857 1867	61.4	1894 1899	94.0	10, 1877	50.0	14, 1884 13, 1894	35.0	12.1	1.9	75.8	55.4
July	73.2	1852	63.4	1880	88.0	25, 1891	54.0	16, 1894	24 0	11.6	1.7	78.0	59.5
August	75.1	1864	65.8	1880 1889	92.0	15, 1884	54.0	29, 1879	28.0	11.4	1.7	81.1	60.8
September	73.6	1852	63.1	1880	101.0	22, 1883	50.0	18, 1882	35.0	13.0	2.0	82.9	57.0
October	68.8	1853	59.7	1886	92.0	26–28, 1879	44.0	30, 1878	37.0	14.1	1.8	79.0	49.8
November	64.6	1900	56.0	1886	91.0	4, 1890	38.0	8, 1881 24, 1895	38.0	17.7	2.3	75.6	44.9
December	63.3	1867	50.0	1856	82.0	6, 1874	32.0	25, 1879	40.0	16.2	1.9	75.6	42.8
Annual	63.8	1867	58.4	1894	101.0	Sept. 22, 1883	32.0	Jan. 31, 1880 Dec. 25, 1879	43.0	13.9	2.0	82.9	40.2

a Also, 21st, 1883; 7th, 1894.

Weather.

Month.	Average number of—				Month.	Average number of—			
	Clear days.	Partly cloudy days.	Cloudy days.	Rainy days.		Clear days.	Partly cloudy days.	Cloudy days.	Rainy days.
January	17	8	6	6	August	12	15	4	0
February	13	9	6	8	September	16	11	3	0
March	11	10	10	8	October	17	10	4	2
April	13	10	7	4	November	18	8	4	3
May	9	11	11	3	December	15	10	6	6
June	10	14	6	1	Annual	165	129	71	41
July	15	12	4	0					

MONTHLY, SEASONAL, AND ANNUAL PRECIPITATION IN INCHES AND HUNDREDTHS.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.	Season of—	Seasonal.
1850	0.00	1.13	1.00	0.09	0.00	0.68	0.00	0.00	0.00	0.19	2.82	1.93	7.84	1849–50	.....
1851	0.03	1.51	0.34	0.87	0.71	0.01	0.00	0.00	0.02	0.01	0.25	3.74	7.49	1850–51	8.41
1852	0.58	1.84	1.87	0.85	0.32	0.00	0.00	0.40	0.00	0.06	1.45	4.50	11.87	1851–52	9.88
1853	0.50	0.20	1.52	0.25	2.10	0.05	0.00	0.21	0.00	0.00	1.28	1.77	7.88	1852–53	10.84
1854	0.99	2.56	1.88	0.89	0.18	0.01	0.07	1.36	0.09	0.27	0.04	3.29	11.63	1853–54	10.99
1855	1.97	3.59	1.30	1.52	0.06	0.00	0.00	0.04	0.00	0.11	2.15	0.41	11.15	1854–55	12.17
1856	1.27	1.86	1.59	2.17	0.29	0.00	0.00	0.00	0.07	0.00	1.22	1.30	9.77	1855–56	9.85
1857	0.26	1.76	0.00	0.04	0.08	0.03	0.00	0.02	0.01	0.49	2.16	1.30	6.15	1856–57	4.78
1858	1.52	0.44	1.24	0.17	0.00	0.19	0.00	0.04	0.10	0.47	0.28	3.10	7.56	1857–58	7.56
1859	0.00	1.89	0.20	0.36	0.17	0.00	0.02	0.00	0.00	0.18	1.49	1.79	6.10	1858–59	6.59
1860	0.72	1.49	0.15	0.65	0.04	0.05	0.14	0.00	0.00	0.00	2.88	2.99	9.11	1859–60	6.70
1861	0.82	0.79	0.05	0.04	0.00	0.19	0.00	0.00	1.59	0.05	1.19	3.20	7.92	1860–61	7.76
1862	5.56	1.39	0.97	1.05	0.16	0.48	0.11	0.00	0.00	0.89	0.05	0.93	11.59	1861–62	15.75
1863	0.32	1.09	0.33	0.13	0.02	0.00	0.00	0.00	0.36	0.00	0.73	0.04	3.02	1862–63	3.76
1864	0.04	2.50	0.20	0.01	1.25	0.01	0.11	0.00	0.00	0.04	2.41	1.04	7.61	1863–64	5.25
1865	1.28	3.00	0.00	0.56	0.00	0.01	1.29	0.00	0.00	0.02	0.52	0.84	7.52	1864–65	9.63
1866	5.05	3.43	1.47	0.11	0.09	0.00	0.00	0.10	0.00	0.00	0.24	1.82	12.31	1865–66	11.63
1867	2.32	0.85	7.88	0.48	0.04	0.00	0.00	0.30	0.00	0.34	0.45	3.06	15.72	1866–67	13.93
1868	3.37	1.63	0.73	1.20	0.15	0.00	0.51	0.00	0.05	0.00	2.00	1.52	11.16	1867–68	11.44
1869	2.88	1.88	1.98	0.58	0.33	0.00	0.05	0.00	0.00	0.05	2.32	0.94	10.96	1868–69	11.22
1870	0.54	0.77	0.33	0.20	0.28	0.00	0.04	0.07	0.00	1.54	0.18	0.42	4.37	1869–70	5.54
1871	0.52	1.85	0.01	0.70	0.34	0.00	0.00	0.00	0.00	0.00	1.33	1.39	5.64	1870–71	5.06
1872	0.99	2.63	0.46	0.26	0.12	0.00	0.00	0.18	0.00	0.00	0.00	1.40	6.04	1871–72	7.36
1873	0.44	4.15	0.11	0.10	0.03	0.00	0.00	1.95	0.00	0.00	0.77	5.46	13.01	1872–73	8.18
1874	3.11	3.73	1.20	0.34	0.34	0.00	0.12	0.00	0.11	0.53	0.88	0.55	10.91	1873–74	15.07
1875	2.38	0.37	0.45	0.12	0.20	0.02	0.00	0.21	0.89	0.00	2.25	0.41	6.80	1874–75	5.82
1876	2.47	2.44	1.78	0.06	0.05	0.05	0.03	0.06	0.08	0.08	0.04	0.15	7.24	1875–76	9.99
1877	1.05	0.18	1.44	0.26	0.43	0.00	0.00	0.00	0.00	0.81	0.06	3.89	8.12	1876–77	3.66
1878	1.45	4.83	1.41	2.91	0.58	0.16	0.00	0.00	0.00	0.96	0.00	1.57	13.87	1877–78	16.10
1879	3.54	1.04	0.10	0.60	T.	0.07	0.00	0.00	0.00	0.29	2.77	6.30	14.71	1878–79	7.88
1880	0.61	1.50	1.43	1.34	0.06	0.06	0.09	0.32	0.00	0.53	0.28	4.15	10.37	1879–80	14.77
1881	0.52	0.45	1.88	1.35	0.04	0.05	0.00	0.01	0.04	0.24	0.12	0.30	5.00	1880–81	9.26
1882	4.53	2.55	1.02	0.45	0.18	0.07	0.00	T.	0.01	0.41	0.39	0.13	9.74	1881–82	9.50
1883	1.09	0.95	0.41	0.31	1.14	0.08	0.00	0.00	0.00	2.01	0.20	1.82	8.01	1882–83	4.92
1884	1.34	9.05	6.23	2.84	2.17	0.31	0.00	T.	0.07	0.35	0.11	5.12	27.59	1883–84	25.97
1885	0.35	0.02	0.78	1.20	0.61	0.06	T.	0.13	T.	0.31	1.56	0.71	5.73	1884–85	8.80
1886	6.95	1.51	3.73	1.95	0.04	0.07	T.	T.	0.00	0.05	0.95	0.10	15.35	1885–86	16.83
1887	0.04	4.51	0.02	2.14	0.47	0.04	0.01	T.	T.	T.	2.08	1.14	10.45	1886–87	8.33
1888	1.96	1.48	2.79	0.10	0.22	0.04	0.01	T.	0.04	0.26	1.83	2.84	11.57	1887–88	9.82
1889	1.72	1.80	2.20	0.19	0.03	0.10	T.	0.04	T.	2.12	0.12	7.71	16.03	1888–89	11.05
1890	2.79	1.70	0.41	0.05	0.08	0.00	0.00	T.	0.65	0.01	0.72	1.61	8.02	1889–90	14.98
1891	1.21	4.84	0.27	0.76	0.35	0.05	T.	0.00	0.08	0.04	T.	1.29	8.99	1890–91	10.47
1892	1.58	2.96	0.96	0.41	1.15	0.13	0.00	0.05	T.	0.22	0.94	0.69	9.09	1891–92	8.65
1893	0.78	0.47	5.50	0.22	0.39	T.	T.	0.00	0.00	0.11	0.91	1.91	10.29	1892–93	9.21
1894	0.29	0.49	1.05	0.11	0.09	0.01	0.00	0.04	0.01	T.	0.00	2.26	4.35	1893–94	5.01
1895	7.33	0.53	1.43	0.11	0.19	0.00	0.00	0.00	0.01	0.27	1.19	0.27	11.33	1894–95	11.86
1896	1.27	0.02	2.89	0.25	0.03	0.01	T.	0.13	T.	0.97	0.98	2.18	8.73	1895–96	6.34
1897	3.13	2.72	1.53	0.02	0.12	T.	0.01	T.	T.	1.06	0.02	0.32	8.93	1896–97	11.66
1898	1.71	0.06	0.91	0.22	0.66	0.02	0.00	0.00	0.07	0.00	0.15	0.87	4.67	1897–98	4.98
1899	2.34	0.30	0.85	0.29	0.10	0.27	0.00	0.07	0.00	0.35	0.86	0.65	6.08	1898–99	5.31
1900	0.69	0.03	0.53	1.26	1.45	0.08	0.00	T.	T.	0.30	1.43	0.00	5.77	1899–00	5.90
1901	2.06	4.77	1.07	0.01	0.77	0.02	T.	T.	0.06	0.28	0.41	0.02	9.49	1900–01	10.45
Mean	1.75	1.91	1.37	0.64	0.34	0.07	0.05	0.11	0.07	0.33	0.96	1.97	9.52	.....	.....

MONTHLY EXTREMES OF PRECIPITATION.

Month.	Greatest monthly precipitation.		Least monthly precipitation.		Number of times precipitation has exceeded normal in 50 years.	Month.	Greatest monthly precipitation.		Least monthly precipitation.		Number of times precipitation has exceeded normal in 50 years.
	Amount.	Date.	Amount.	Date.			Amount.	Date.	Amount.	Date.	
	Inches.		*Inches.*				*Inches.*		*Inches.*		
January	7.33	1895	0.00	a1850	16	July	1.29	1865	0.00	a1850	8
February	9.05	1884	0.02	a1885	17	August	1.95	1873	0.00	a1850	10
March	7.88	1867	0.00	a1857	20	September	1.59	1861	0.00	a1850	7
April	2.91	1878	0.01	a1864	17	October	2.12	1889	0.00	a1853	15
May	2.17	1884	0.00	a1850	14	November	2.88	1860	0.00	a1872	20
June	0.68	1850	0.00	a1852	10	December	7.71	1889	0.00	a1900	16

a Also in other years.

GREATEST PRECIPITATION, IN INCHES AND HUNDREDTHS, IN TWENTY-FOUR HOURS.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Greatest annual.
1872	0.53	1.12	0.29	0.15	0.10	0.00	0.00	0.09	0.00	0.00	0.00	0.53	1.12
1873	0.20	1.25	0.05	0.10	0.02	0.00	0.00	1.80	0.00	0.00	0.54	2.52	1.80
1874	1.35	1.24	0.28	0.33	0.21	0.00	0.09	0.00	0.10	0.18	0.31	0.55	1.35
1875	0.95	0.35	0.30	0.11	0.08	0.02	0.00	0.21	0.29	0.00	0.52	0.32	0.95
1876	0.55	1.53	0.80	0.05	0.05	0.05	0.03	0.06	0.03	0.06	0.03	0.10	1.53
1877	0.41	0.18	0.52	0.16	0.20	0.00	0.00	0.00	0.00	0.78	0.06	1.09	1.09
1878	0.55	1.11	0.36	0.82	0.28	0.07	0.00	0.00	0.00	0.96	0.00	0.58	0.96
1879	1.53	0.80	0.05	0.17	0.00	0.07	0.00	0.00	0.00	0.16	2.75	2.55	2.75
1880	0.31	0.82	0.44	0.38	0.06	0.06	0.07	0.28	0.00	0.48	0.17	1.29	1.29
1881	0.29	0.18	0.83	0.70	0.02	0.05	0.00	0.01	0.04	0.21	0.07	0.19	0.83
1882	2.94	0.99	0.55	0.13	0.17	0.05	0.00	0.00	0.01	0.21	0.31	0.11	2.94
1883	0.98	0.43	0.19	0.18	0.69	0.08	0.00	0.00	0.00	1.82	0.20	0.63	1.82
1884	0.92	1.89	1.71	1.01	1.45	0.24	0.00	T.	0.07	0.23	0.10	1.66	1.89
1885	0.20	0.01	0.56	0.80	0.54	0.04	T.	0.13	0.00	0.21	0.59	0.48	0.80
1886	1.76	0.69	1.38	1.20	0.02	0.04	T.	T.	0.00	0.05	0.74	0.06	1.76
1887	0.04	1.96	0.02	0.94	0.44	0.04	0.01	T.	T.	T.	1.80	0.74	1.96
1888	0.75	0.66	1.25	0.68	0.15	0.04	0.01	T.	0.04	0.20	0.60	1.04	1.25
1889	0.67	0.96	1.16	0.14	0.02	0.10	T.	0.04	T.	1.54	0.08	2.31	2.31
1890	1.32	1.04	0.35	0.03	0.04	0.00	0.00	T.	0.37	0.01	0.72	1.23	1.32
1891	1.08	1.35	0.17	0.55	0.34	0.05	T.	0.00	0.08	0.02	0.09	0.69	1.35
1892	1.25	1.25	0.34	0.41	0.95	0.13	0.00	0.04	T.	0.10	0.82	0.43	1.25
1893	0.45	0.43	2.00	0.22	0.22	T.	T.	0.00	0.00	0.11	0.81	0.74	2.00
1894	0.20	0.15	0.65	0.06	0.08	0.01	0.00	0.04	0.01	T.	0.00	0.59	0.65
1895	2.15	0.29	0.70	0.08	0.15	0.00	0.00	0.00	0.01	0.22	0.46	0.15	2.15
1896	0.57	0.02	1.32	0.12	0.03	0.01	T.	0.09	T.	0.64	0.88	1.10	1.32
1897	1.62	1.04	0.55	0.02	0.04	T.	0.01	T.	T.	0.67	0.02	0.17	1.62
1898	0.55	0.06	0.47	0.09	0.26	0.02	0.00	0.00	0.06	0.00	0.11	0.71	0.71
1899	1.33	0.24	0.52	0.28	0.07	0.25	0.00	0.07	0.00	0.20	0.42	0.54	1.33
1900	0.66	0.03	0.48	0.79	1.35	0.05	0.00	T.	T.	0.20	0.52	0.50	1.35
1901	0.74	2.39	0.53	0.01	0.52	0.02	T.	T.	0.06	0.18	0.37	0.01	2.39
Greatest	2.94	2.39	2.00	1.20	1.45	0.25	0.09	1.80	0.37	1.82	2.75	2.55	2.94
Date	12	8-9	.....	11-12	14-15	1	22	12	28-29	27	9	27	Jan. 12
Year	1882	1901	1893	1886	1884	1899	1874	1873	1890	1883	1879	1879	1882

TOTAL NUMBER OF DAYS WITH PRECIPITATION SINCE NOVEMBER 1, 1871.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Less than 0.01	19	22	38	16	43	15	11	17	12	25	15	22
0.01 to 0.10	71	66	82	57	78	31	4	10	14	36	42	62
0.11 to 0.25	31	33	31	35	8	3	0	1	2	23	17	35
0.26 to 0.50	35	30	39	16	8	0	0	2	1	3	15	30
0.51 to 1.00	20	22	21	10	5	0	0	0	0	4	10	20
Over 1.00 inch	14	10	5	1	2	0	1	0	0	1	2	13

DATES WHEN PRECIPITATION EQUALED OR EXCEEDED 2.50 INCHES IN ANY CONSECUTIVE TWENTY-FOUR HOURS, LOCAL TIME.

	Inches.
December 4, 1873, 10 p. m. 3d, during night 4th	2.52
November 9, 1879, during a. m. 9th, to 8.10 p. m. 9th	2.75
December 27, 1879, 6 a. m. to 6 a. m. December 28	2.55
January 12, 1882, 3.50 a. m. to 3 a. m. January 13	2.94

No snow is reported to have fallen at San Diego since the beginning of the record of observations in 1850.

Maximum rate of rainfall from recording rain gauge; record since 1893: December 28, 1896, in one minute, 0.19; in five minutes, 0.32; in ten minutes, 0.47; in one hour, 0.79.

HIGHEST WIND VELOCITY, DIRECTION, AND DATE FOR EACH MONTH DURING THE PAST TWENTY-SEVEN YEARS.

[Record began January 1, 1873.]

Months.	Velocity.	Direction.	Day and year.	Months.	Velocity.	Direction.	Day and year.
January	37	(a)	a 1873	July	30	NW.	2, 1881
February	40	NW.	a 1878	August	24	W.	b 18, 1885
March	37	(a)	a 1876	September	28	NW.	7, 1881
April	39	(a)	a 1877	October	32	NW.	29, 1877
May	28	(a)	a 1877	November	32	NW.	c 12, 1877
June	24	SW.	11, 1886	December	36	NW.	d 2, 1887

a Direction and date missing. b Also on August 25, 29, and 31, 1877. c Also on November 21, 1886. d Also, west, on December 23, 1888.

AVERAGE HOURLY WIND VELOCITY (IN MILES PER HOUR).

[Record began January 1, 1873.]

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
A. M.												
1	3.8	4.0	3.7	3.6	3.5	3.1	2.7	2.5	2.6	2.7	3.1	3.6
2	3.8	4.1	3.8	3.6	3.4	3.1	2.5	2.3	2.6	2.7	3.2	3.8
3	3.8	3.9	3.8	3.6	3.4	3.0	2.4	2.2	2.6	2.9	3.3	3.9
4	3.9	4.0	3.8	3.5	3.4	3.1	2.4	2.3	2.7	2.8	3.2	3.9
5	4.0	4.1	4.0	3.6	3.4	3.2	2.5	2.3	2.7	2.9	3.4	3.9
6	4.1	4.1	4.0	3.6	3.5	3.2	2.6	2.4	2.7	2.9	3.5	3.9
7	3.9	3.9	4.0	3.7	3.6	3.2	2.6	2.3	2.8	2.9	3.4	3.9
8	3.9	4.1	4.0	3.7	3.4	3.2	2.7	2.4	2.7	3.2	3.5	3.8
9	3.9	4.1	4.0	3.7	3.3	3.2	2.8	2.5	2.8	3.1	3.6	3.9
10	4.0	4.2	3.8	3.5	3.6	3.4	3.1	2.6	2.8	3.0	3.5	4.0
11	3.7	4.0	3.7	3.9	4.3	4.1	4.0	3.4	3.2	3.0	3.1	3.9
12 (noon)	3.3	3.8	4.3	4.8	5.6	5.6	5.7	5.0	4.6	3.8	3.1	3.4
P. M.												
1	3.5	4.7	5.6	7.0	7.8	7.7	7.7	7.1	6.7	5.5	4.4	3.9
2	4.5	5.9	7.0	8.7	9.0	9.2	9.1	8.9	8.7	7.4	5.8	4.9
3	5.9	7.5	8.5	9.9	10.0	10.0	10.1	9.9	10.0	9.0	7.4	6.4
4	7.3	8.8	9.5	10.5	10.5	10.5	10.3	10.3	10.5	9.6	8.7	7.6
5	8.0	9.6	10.0	10.6	10.5	10.5	10.4	10.2	10.4	9.8	9.1	8.3
6	8.3	9.7	9.9	10.3	10.3	10.1	10.0	9.8	9.9	9.4	8.7	8.0
7	8.1	9.2	9.4	9.6	9.6	9.4	9.3	9.2	9.0	8.4	7.6	7.0
8	6.7	8.0	8.5	8.7	8.8	8.6	8.4	8.3	8.0	6.8	5.7	5.5
9	4.9	6.1	6.9	7.4	7.5	7.4	7.5	8.3	6.3	4.8	3.9	4.3
10	4.0	4.6	5.1	5.7	6.1	6.0	6.1	7.1	4.8	3.5	3.2	3.8
11	3.8	4.0	4.1	4.5	4.9	4.9	4.7	5.4	3.6	3.0	3.1	3.8
12 (midnight)	3.8	4.0	3.8	3.8	4.0	3.8	3.6	4.1	3.0	2.6	3.1	3.8
Average	4.8	5.4	5.6	5.9	6.0	5.8	5.6	5.4	5.2	4.8	4.6	4.7

NUMBER OF DAYS WITH ONE HOUR OR MORE OF FOG, AND NUMBER OF THUNDERSTORMS IN ELEVEN YEARS.

[Record began January 1, 1890.]

Month.	Foggy days.		Thunderstorms.		Month.	Foggy days.		Thunderstorms.	
	Number.	Average.	Number.	Average.		Number.	Average.	Number.	Average.
January	22	2	0	0	July	6	0	2	0
February	17	1	3	0	August	6	0	3	0
March	10	1	2	0	September	24	3	0	0
April	16	2	3	0	October	26	3	6	1
May	3	0	1	0	November	22	2	1	0
June	6	1	0	0	December	11	1	1	0

AVERAGE PRESSURE, IN INCHES AND THOUSANDTHS, FOR EACH HOUR OF SEVENTY-FIFTH MERIDIAN TIME.

[Correction applied to reduce to standard gravity, −0.03. λ=32° 43′ N.; φ=117° 10′ W.; local time 2h 49m slow. H=87 ft.]

1900.	1h a. m.	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	Noon.	1h p. m.
January	29.961	0.961	0.974	0.971	0.971	0.970	0.964	0.963	0.967	0.976	0.991	0.005	0.013
February	29.918	0.920	0.917	0.913	0.910	0.907	0.903	0.905	0.914	0.921	0.930	0.937	0.940
March	29.862	0.861	0.859	0.857	0.850	0.843	0.840	0.842	0.849	0.856	0.868	0.875	0.878
April	29.881	0.881	0.879	0.874	0.865	0.861	0.859	0.861	0.871	0.882	0.892	0.897	0.900
May	29.885	0.885	0.882	0.876	0.869	0.864	0.865	0.865	0.874	0.884	0.888	0.891	0.891
June	29.817	0.816	0.807	0.799	0.792	0.790	0.788	0.797	0.804	0.813	0.821	0.823	0.825
July	29.762	0.763	0.761	0.758	0.752	0.751	0.753	0.759	0.771	0.780	0.785	0.782	0.783
August	29.832	0.832	0.830	0.827	0.819	0.815	0.816	0.823	0.834	0.844	0.853	0.861	0.859
September	29.813	0.812	0.813	0.811	0.808	0.807	0.805	0.812	0.819	0.827	0.833	0.836	0.839
October	29.847	0.846	0.844	0.844	0.843	0.839	0.839	0.843	0.849	0.858	0.869	0.875	0.874
November	29.890	0.891	0.889	0.887	0.884	0.881	0.876	0.879	0.885	0.895	0.905	0.915	0.918
December	29.971	0.972	0.971	0.966	0.965	0.961	0.953	0.952	0.958	0.968	0.976	0.991	0.998
Year	29.872	0.872	0.869	0.865	0.861	0.857	0.855	0.858	0.866	0.875	0.884	0.891	0.893

1900.	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	Mid.	Mean.	Mean max.	Mean min.
January	0.002	0.975	0.951	0.942	0.942	0.943	0.944	0.955	0.962	0.969	0.978	0.970	0.025	0.926
February	0.937	0.918	0.900	0.884	0.876	0.875	0.878	0.888	0.897	0.903	0.910	0.908	0.972	0.849
March	0.872	0.857	0.845	0.832	0.824	0.820	0.823	0.830	0.837	0.849	0.863	0.850	0.891	0.812
April	0.895	0.889	0.881	0.872	0.864	0.856	0.859	0.860	0.867	0.876	0.885	0.875	0.927	0.823
May	0.890	0.889	0.882	0.872	0.864	0.858	0.854	0.854	0.860	0.868	0.876	0.874	0.910	0.838
June	0.825	0.821	0.814	0.809	0.803	0.796	0.793	0.793	0.798	0.803	0.812	0.807	0.843	0.777
July	0.781	0.775	0.768	0.759	0.750	0.743	0.738	0.738	0.741	0.749	0.761	0.761	0.793	0.730
August	0.857	0.853	0.845	0.836	0.826	0.819	0.813	0.814	0.816	0.821	0.827	0.832	0.867	0.800
September	0.832	0.822	0.815	0.804	0.793	0.787	0.787	0.788	0.793	0.805	0.813	0.811	0.848	0.774
October	0.867	0.851	0.839	0.828	0.824	0.821	0.822	0.827	0.836	0.845	0.852	0.845	0.885	0.809
November	0.910	0.885	0.870	0.859	0.854	0.853	0.856	0.865	0.873	0.879	0.886	0.883	0.928	0.841
December	0.982	0.954	0.941	0.933	0.925	0.925	0.929	0.939	0.950	0.957	0.963	0.958	0.009	0.913
Year	0.888	0.874	0.863	0.852	0.845	0.841	0.841	0.846	0.852	0.860	0.869	0.864	0.908	0.824

AVERAGE TEMPERATURE (DEGREES FAHRENHEIT) EACH HOUR, SEVENTY-FIFTH MERIDIAN TIME.

[h_t=94 ft.; local time, 2h 49m slow.]

1900.	1h a. m.	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	Noon.	1h p. m.
January	56.0	55.3	54.5	54.3	53.9	53.8	53.3	53.1	53.1	52.6	53.2	55.8	58.8
February	55.0	54.4	53.7	53.3	52.8	52.5	52.1	52.1	52.2	52.3	54.0	57.6	60.0
March	58.2	57.7	57.0	56.7	56.2	55.8	55.6	54.7	54.5	54.9	56.7	59.5	61.4
April	56.2	55.7	54.9	54.5	54.2	53.9	53.5	52.7	52.8	54.1	56.5	58.1	59.5
May	59.6	59.0	58.5	58.1	57.9	57.6	57.5	56.9	56.7	57.9	59.1	60.7	62.1
June	62.9	62.6	62.1	61.9	61.8	61.6	61.2	60.6	60.7	61.5	62.6	64.0	65.7
July	65.5	65.2	65.0	64.8	64.7	64.5	64.2	64.1	64.4	65.3	66.5	68.0	69.5
August	64.5	64.2	63.9	63.9	63.9	63.7	63.5	63.2	63.1	63.9	65.3	66.5	68.0
September	63.6	63.2	62.4	62.1	61.5	61.2	61.1	60.8	60.9	62.1	64.7	66.6	68.7
October	61.4	60.9	60.2	60.0	59.9	59.6	59.3	58.9	58.6	58.8	61.3	63.3	65.5
November	60.8	60.7	60.4	60.2	59.6	59.5	59.4	59.9	58.8	59.0	61.4	64.1	67.4
December	57.3	56.9	56.2	56.0	55.1	54.7	54.4	54.4	54.4	53.9	55.0	58.7	63.2
Year	60.1	59.6	59.1	58.8	58.5	58.2	57.9	57.6	57.5	58.0	59.7	61.9	64.2

1900.	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	Mid.	Mean.	Mean max.	Mean min.
January	60.6	62.3	62.4	62.5	62.3	61.5	60.3	59.4	58.5	57.3	56.5	57.1	63.7	51.8
February	62.1	63.4	63.3	63.6	63.2	62.4	61.3	59.8	58.6	57.0	55.9	57.2	64.6	50.7
March	62.4	63.6	63.4	63.3	63.2	62.7	62.0	60.9	60.0	59.5	58.8	59.1	64.5	54.0
April	60.2	60.9	60.9	60.5	60.8	60.1	59.3	58.6	57.8	57.3	56.8	57.1	61.7	52.0
May	62.6	63.7	64.3	64.5	64.4	63.8	63.8	62.8	61.6	60.7	60.2	60.6	65.5	56.3
June	66.4	67.3	67.2	67.1	66.9	66.6	65.8	65.4	64.6	63.8	63.3	63.9	68.8	60.1
July	69.9	70.7	70.9	70.6	70.3	69.7	69.0	68.3	67.1	66.4	66.2	67.1	71.7	63.5
August	68.4	68.6	68.7	68.8	68.6	68.0	67.5	66.4	65.4	64.9	64.6	65.7	70.0	62.5
September	69.3	69.9	70.1	70.1	69.7	69.0	68.3	66.9	65.9	65.0	64.3	65.3	71.1	60.1
October	66.5	67.1	67.2	67.2	66.9	66.2	65.0	64.2	63.5	62.9	62.1	62.8	68.3	57.9
November	69.5	70.0	69.6	69.9	69.5	68.7	66.7	64.9	63.7	62.8	61.9	63.7	72.1	57.2
December	65.5	67.0	67.2	66.6	66.8	65.7	63.7	61.9	60.3	59.0	58.1	59.7	68.5	52.3
Year	65.3	66.2	66.3	66.2	66.0	65.4	64.4	63.3	62.2	61.4	60.7	61.6	67.5	56.5

SUNSHINE FOR THE YEARS 1898, 1899, AND 1900.

[N. lat. 32° 43′.]

	Percentage of sunshine recorded during hours ending (local time)—															Total (hours).	Percentage of possible.
	5h a. m.	6h	7h	8h	9h	10h	11h	Noon.	1h	2h	3h	4h	5h	6h	7h	8h	
1898.																	
January	.....	.....	74	66	64	73	75	70	73	72	74	71	60	60	.....	.....	921.5	70
February	.....	.....	46	51	65	68	76	86	87	85	79	82	75	70	.....	.....	229.6	74
March	.....	89	68	60	64	71	78	85	84	85	81	75	70	71	85	.....	276.4	74
April	.....	35	38	41	56	64	71	76	76	86	83	80	74	62	52	.....	255.2	65
May	47	32	31	35	44	56	66	73	77	83	82	76	72	63	57	80	260.4	60
June	21	20	22	26	31	51	76	87	87	84	86	80	70	59	40	33	248.4	58
July	29	17	18	30	53	66	77	91	93	93	93	90	83	80	71	68	299.6	69
August	.....	31	36	33	67	84	92	96	98	97	96	98	95	83	41	.....	317.9	77
September	.....	54	49	61	71	78	86	93	96	95	95	94	91	88	93	.....	306.5	83
October	.....	67	37	37	50	71	89	93	96	96	94	89	82	81	.....	.....	268.7	76
November	.....	.....	81	80	88	93	96	97	92	93	95	94	93	88	.....	.....	287.2	91
December	.....	.....	76	73	74	76	79	82	80	84	80	76	73	100	.....	.....	241.7	78
Sum	97	345	571	593	727	851	961	1,027	1,039	1,058	1,038	1,005	938	905	439	181	3,913.1	875
Percentage of possible	.....	.....	48	49	61	71	80	86	87	88	86	84	78	75	.....	.....	326.1	73

SUNSHINE FOR THE YEARS 1898, 1899, AND 1900—Continued.

[N. lat 32° 43′.]

	Percentage of sunshine recorded during hours ending (local time)—															Total (hours).	Percentage of possible.
	5h a. m.	6h	7h	8h	9h	10h	11h	Noon.	1h	2h	3h	4h	5h	6h	7h	8h	
1899.																	
January			22	64	65	75	75	79	80	83	85	84	81	81			245.4	77
February			47	54	63	79	79	88	88	89	88	84	79	78			241.0	78
March		22	49	52	60	66	79	86	89	86	89	90	85	79	60		284.7	76
April		40	37	40	54	70	89	86	90	91	86	84	84	64	57		277.6	71
May	29	28	28	31	47	66	74	82	87	90	89	86	76	56	51	0	274.8	64
June	11	10	9	24	42	52	66	70	74	74	78	77	72	64	38	37	227.6	53
July	0	7	16	37	68	77	90	90	90	97	97	95	92	82	87	86	323.4	74
August		17	17	36	74	91	94	96	96	97	97	95	90	89	87		324.4	78
September		21	19	28	50	65	80	88	90	91	91	89	87	81	87		262.4	71
October		0	44	54	60	72	78	78	79	80	81	82	81	80			253.8	72
November			60	59	58	59	70	81	83	84	77	76	69	75			223.6	71
December			68	68	77	80	78	79	79	75	79	74	69	18			235.6	76
Sum	31	145	416	547	718	852	952	1,008	1,025	1,037	1,037	1,016	965	847	467	123	3,174.3	861
Percentage of possible			35	46	60	71	79	84	85	86	86	85	80	71			264.5	72
1900.																		
January			0	47	51	64	82	80	81	84	79	74	65	60			224.7	71
February			68	70	75	84	94	91	90	92	96	92	79	72			262.1	85
March		44	42	48	52	61	66	71	79	84	81	75	64	61	68		244.2	66
April		57	50	53	62	79	76	79	77	78	79	72	68	66	57		269.1	69
May	7	27	28	41	42	62	74	82	80	84	92	87	76	71	68	100	280.7	65
June	4	4	5	15	32	44	57	70	72	74	74	74	72	60	53	56	215.3	50
July	0	13	16	27	53	81	85	90	96	95	96	92	88	79	66	64	305.9	70
August		11	15	21	42	62	85	95	92	92	89	86	80	73	53		272.0	66
September		33	43	48	54	80	80	83	89	89	90	88	87	87	100		282.1	76
October		67	42	45	48	60	72	83	85	85	82	86	83	83			248.8	71
November			49	47	71	77	78	82	80	83	82	70	60	100			226.3	72
December			84	77	90	95	92	90	94	92	96	93	90	100			282.1	91
Sum	11	256	442	539	672	849	941	996	1,015	1,032	1,036	989	912	912	465	220	3,113.1	852
Percentage of possible			37	45	56	71	78	83	85	86	86	82	76	76			259.4	71

EXCESSIVE PRECIPITATION.

Stations and dates.	Total duration.		Total amount of precipitation (inches).	Excessive rate.		Amount before excessive rate began (inches).	Accumulated depths of precipitation (in inches) during periods of time indicated.												
	From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
San Diego, Cal.: Jan. 10, 1899	6.05 p. m.	11.59 p. m.	1.20	10.50 p. m.	11.30 p. m.	0.50	0.15	0.26	0.29	0.37	0.40	0.46	0.55	0.60	0.62	0.65	0.70	....	....	....

CLIMATOLOGY OF THE GREAT VALLEY.

RED BLUFF.

Data by Mr. MAURICE CONNELL, Observer, Weather Bureau.

Red Bluff is the county seat of Tehama County, at the northern end of the Sacramento Valley. The city is situated on the western bank of the Sacramento River, the average elevation above sea level being 309 feet, and is in latitude 40° 10′ north, longitude 122° 14′ west. The land slopes gently to the river, and within a radius of 5 miles the country is comparatively flat. The general movement of the air is from the north and northeast into the valley from the mountains on the north and east. During the summer months, however, there is a well-marked southerly movement of the air, which is in part due to the strong westerly indraft through the Golden Gate and its subsequent deflection northward through the valley. The highest temperature recorded is 114° and the lowest 18°. The average annual precipitation is 25.56 inches.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES F.).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	47.3	50.2	55.5	60.4	67.4	81.0	81.6	83.2	72.9	65.4	55.6	47.4	64.0
1879	44.6	53.6	57.0	61.3	62.5	78.7	81.6	83.4	77.2	64.0	51.0	44.6	63.3
1880	44.5	46.5	49.7	55.8	64.1	73.9	83.4	77.4	74.7	65.3	50.0	49.4	61.2
1881	50.0	53.0	55.6	63.6	69.3	72.8	78.7	76.4	71.5	57.5	51.0	45.9	62.1
1882	44.1	44.4	52.5	56.6	67.4	75.6	84.3	81.2	60.3	58.3	51.3	47.5	60.2
1883	41.2	45.1	58.3	56.3	64.3	80.3	84.9	79.9	75.4	57.7	50.6	44.4	61.5
1884	46.2	45.9	51.6	56.8	68.0	69.6	78.4	81.5	67.3	62.1	54.7	47.5	60.8
1885	47.5	53.5	61.0	62.1	70.4	71.6	80.7	83.8	74.8	65.6	52.7	49.3	64.4
1886	46.2	54.5	52.8	57.7	66.9	79.1	82.6	81.5	75.6	60.7	51.3	50.0	63.2
1887	48.7	48.4	56.9	60.2	68.8	77.1	85.9	81.3	76.4	71.1	55.2	48.2	64.4
1888	40.9	53.9	54.5	67.0	68.1	70.7	80.9	83.7	81.2	68.2	54.8	48.3	64.5
1889	45.8	51.6	56.8	61.0	66.8	80.0	81.3	80.0	76.0	61.4	54.4	44.8	63.3
1890	39.2	45.2	50.8	60.3	67.6	72.6	80.4	79.5	74.4	65.0	57.9	45.0	61.5
1891	48.5	44.4	55.0	57.8	66.3	72.2	82.6	83.1	72.9	66.0	56.8	42.5	62.4
1892	47.1	53.0	56.0	54.1	65.6	71.8	78.7	80.4	72.0	63.5	56.1	47.6	62.2
1893	43.2	46.8	49.8	54.6	65.8	73.4	80.4	81.0	67.5	61.4	53.5	50.2	60.6
1894	42.4	45.3	51.5	61.4	66.8	69.1	83.0	82.0	74.8	63.9	59.0	45.0	62.0
1895	43.8	52.8	52.8	59.1	66.2	78.2	80.0	81.2	68.5	67.0	53.6	43.4	62.2
1896	48.8	53.2	53.8	52.2	61.0	77.4	85.3	78.8	72.8	67.2	50.8	49.0	62.5
1897	45.8	47.0	54.4	63.2	72.6	74.0	82.1	80.2	72.6	62.9	49.7	46.0	62.0
1898	42.4	51.0	59.2	64.4	63.6	75.4	83.1	81.3	72.6	64.3	53.6	45.7	62.5
1899	48.8	51.6	52.2	60.8	63.2	77.9	82.0	73.8	78.0	61.0	54.4	45.5	62.4
1900	48.8	51.1	58.6	57.6	67.0	76.8	82.6	77.0	69.9	60.0	54.8	45.4	62.5
Means (23 years)	45.3	49.4	54.8	59.2	66.6	75.1	81.9	80.9	72.8	63.5	53.6	46.6	62.4

Summary of Monthly Means and Extremes of Temperature.

Month.	Highest monthly mean.		Lowest monthly mean.		Absolute maximum.		Absolute minimum.		Mean daily range.	Mean daily variability of mean temperature.	Mean relative humidity at 5 a. m.	Mean relative humidity at 5 p. m.
	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.				
											Per cent.	*Per cent.*
January	50.0	1881	39.2	1890	77.0	27, 1899	18.0	14, 1888	15.6	3.6	87.0	68.0
February	54.5	1886	43.4	1887	82.0	25, 1888	22.0	14, 1884	18.9	3.1	82 0	56.0
March	61.0	1885	49.7	1880	86.0	9, 1892	28.0	16, 1880	19.2	3.0	82.0	53.0
April	67.0	1888	54.1	1892	96.0	24, 1898	34.0	18, 1885	22.2	3.3	76.0	43.0
May	72.6	1897	61.0	1896	110.0	29, 1887	38.0	11, 1892	24.1	3.9	71.0	38.0
June	81.0	1878	69.6	1884	110.0	30, 1891	44.0	1, 1898	27.1	3.5	59.0	26.0
July	85.9	1887	78.4	1884	112.0	8, 1887	53 0	1, 1881	30.5	3.2	49.0	18.0
August	83.8	1885	73.8	1889	114.0	22, 1891	52.0	22, 1881	30.6	3.0	49.0	20.0
September	81.2	1888	60.3	1882	107.0	1, 1891	46.0	9, 1884	26.7	3.2	57.0	28.0
October	71.1	1887	57.5	1881	97.0	5, 1892	32.0	14, 1881	24.6	3.3	67.0	38.0
November	59.0	1894	49.7	1897	88.0	3, 1890	26.0	30, 1880	21.4	3.5	75.0	55.0
December	50.2	1893	42.5	1891	79.0	5, 1885	25.0	13, 1884	13.4	3.5	87.0	70.0
Annual	85.9	.....	39.2	.....	114.0	.....	18.0	.....	22.8	3.3	70.0	43.0

Precipitation Exceeding 2.50 Inches in any Consecutive 24 Hours.

	Inches.		Inches.		Inches.
January 16, 1878	5.11	December 14, 1881	2.89	December 15, 1896	2.64
December 5, 1879	5.04	November 3, 1882	2.88	January 10, 1899	4.04
January 29, 1881	3.25	November 10, 1885	4.73		

Monthly and Annual Precipitation (Inches and Hundredths).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	20.71	16.66	4.16	2.26	0.89	0.00	0.00	0.00	0.42	1.56	1.66	0.69	49.01
1879	3.18	3.67	5.39	2.12	2.18	0.30	0.04	0.28	T	0.48	6.05	9.96	33.64
1880	2.01	1.66	1.70	7.05	1.04	0.00	0.00	0.00	0.00	0.08	0.14	12.85	26.53
1881	9.40	2.79	0.51	1.83	0.79	0.51	T	0.00	1.07	1.61	0.78	5.69	24.93
1882	2.81	3.94	2.67	2.12	0.33	0.15	0.00	0.00	0.49	2.80	5.07	1.44	21.82
1883	0.87	0.39	2.60	1.96	2.96	T	0.00	T	1.04	2.68	0.74	0.52	13.76
1884	3.55	2.21	7.81	4.31	0.18	0.97	0.00	T	0.36	0.90	0.04	7.73	28.06
1885	1.84	1.19	T	0.62	0.64	1.37	0.05	0.00	2.91	0.10	17.05	3.86	29.63
1886	4.85	0.18	1.31	4.12	0.73	T	T	T	0.00	1.76	0.34	3.92	17.21
1887	0.57	5.21	1.13	1.76	0.77	0.26	T	T	0.06	0.00	1.52	2.32	13.60
1888	4.08	2.17	3.47	0.53	0.51	2.61	0.07	0.00	0.33	T	4.32	6.85	24.94
1889	0.51	0.71	6.83	1.11	2.04	0.64	0.00	0.00	0.00	8.41	3.37	9.25	32.87
1890	6.55	3.67	6.14	1.70	2.67	0.11	0.00	0.00	1.55	0.01	0.00	3.20	25.60
1891	1.36	10.68	1.42	2.27	1.50	0.55	0.17	0.00	0.19	0.64	0.46	3.80	23.04
1892	4.30	3.11	2.69	2.92	3.02	0.27	T	T	0.29	1.42	7.25	8.21	33.48
1893	3.82	3.22	6.08	1.42	0.61	0.00	0.03	0.00	1.23	1.09	4.22	2.64	24.36
1894	5.29	2.30	2.40	0.55	1.46	1.00	0.02	T	1.11	0.89	0.95	11.01	26.98
1895	8.29	2.86	2.59	0.34	1.65	0.00	0.16	0.00	1.76	T	1.93	2.99	22.57
1896	7.30	0.27	3.06	3.67	2.42	T	0.00	0.54	0.63	0.66	3.41	6.20	28.46
1897	3.22	6.26	1.99	1.22	0.06	1.25	0.00	T	0.03	2.70	1.49	1.86	20.08
1898	0.59	5.45	0.01	0.63	2.28	0.14	0.00	T	0.45	0.46	1.21	1.69	12.91
1899	9.29	0.01	6.22	0.72	0.69	0.94	0.00	0.02	0.00	3.02	4.08	3.08	28.07
1900	4.51	1.62	2.38	2.69	1.18	0.94	0.00	0.05	0.21	3.25	3.23	2.07	21.77
Average (23 years)	4.72	3.48	3.15	2.08	1.33	0.51	0.02	0.04	0.65	1.48	2.96	5.26	25.40

GREATEST AMOUNT OF PRECIPITATION (INCHES AND HUNDREDTHS) IN TWENTY-FOUR HOURS.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Greatest annual.
1878	5.11	2.41	0.96	0.76	0.40	0.00	0.00	0.00	0.22	1.38	1.20	0.45	5.11
1879	1.54	1.36	1.55	0.43	0.58	0.30	0.03	0.28	0.00	0.23	1.68	5.04	5.04
1880	0.94	0.41	0.78	2.03	0.50	0.00	0.00	0.00	0.00	0.08	0.10	1.84	2.03
1881	3.25	0.45	0.27	0.56	0.70	0.44	0.00	0.00	0.74	0.68	0.33	2.89	3.25
1882	0.91	1.38	0.99	1.03	0.26	0.13	0.00	0.00	0.37	1.05	2.88	0.62	2.88
1883	0.76	0.39	1.14	1.72	1.10	0.00	0.00	0.00	1.04	1.03	0.43	0.40	1.72
1884	1.12	1.06	2.17	1.47	0.14	0.56	0.00	T.	0.17	0.68	0.04	2.00	2.17
1885	0.63	0.45	T.	0.22	0.58	0.71	0.05	0.00	2.91	0.06	4.73	1.83	4.73
1886	1.89	0.18	0.43	1.01	0.22	T.	T.	T.	0.00	1.35	0.21	1.81	1.89
1887	0.30	1.59	0.62	0.82	0.39	0.14	T.	T.	0.06	0.00	0.77	0.83	1.59
1888	0.66	0.96	1.25	0.53	0.15	0.84	0.04	T.	0.33	T.	1.61	1.43	1.61
1889	0.16	0.45	1.95	0.31	0.85	0.58	0.00	0.00	0.00	1.70	1.70	1.83	1.95
1890	2.02	1.16	1.71	1.51	1.67	0.06	0.00	0.00	1.40	0.01	0.00	1.48	2.02
1891	0.92	3.80	0.56	0.82	0.48	0.32	0.16	0.00	0.10	0.44	0.19	0.81	3.80
1892	1.44	1.36	0.91	1.12	1.56	0.22	T.	T.	0.29	0.72	2.30	1.79	2.30
1893	1.89	1.40	1.20	0.65	0.26	0.00	0.03	0.00	0.81	0.96	1.85	0.85	1.89
1894	2.00	0.86	0.85	0.41	0.55	0.45	0.02	T.	1.11	0.38	0.91	1.70	2.00
1895	2.36	1.70	1.05	0.16	1.06	T.	0.10	T.	0.96	T.	0.75	1.26	2.36
1896	1.38	0.17	0.58	1.80	0.77	T.	0.00	0.54	0.58	0.61	1.36	2.64	2.64
1897	1.04	1.12	0.90	0.83	0.04	0.70	0.00	T.	0.02	1.08	1.00	0.93	1.04
1898	0.25	1.54	0.01	0.41	1.09	0.12	0.00	T.	0.20	0.23	0.58	0.92	1.54
1899	4.04	0.01	1.56	0.48	0.34	0.79	0.00	0.02	0.00	1.02	1.00	1.54	4.04
1900	1.58	0.69	0.83	0.90	0.43	0.54	0.00	0.05	0.14	0.88	1.76	1.25	1.58
Greatest monthly	5.11	3.80	2.17	2.03	1.67	0.84	0.10	0.54	2.91	1.70	4.73	5.04	.....

WEATHER.

Month.	Average number of—				Mean cloudiness.	Month.	Average number of—				Mean cloudiness.
	Clear days.	Partly cloudy days.	Cloudy days.	Rainy days.			Clear days.	Partly cloudy days.	Cloudy days.	Rainy days.	
January	11	10	10	11	5.0	August	28	2	1	0	0.9
February	12	9	7	9	4.4	September	24	5	1	3	1.7
March	13	10	8	11	4.6	October	21	7	3	4	2.6
April	13	11	6	8	4.1	November	17	7	6	6	4.0
May	17	9	5	6	3.5	December	11	9	11	12	5.5
June	23	6	1	4	2.1	Annual	218	88	59	75	3.3
July	28	3	0	1	0.5						

NUMBER OF DAYS WITH THUNDERSTORMS.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1884					2		1	1	2	1			7	1893				1			1		1				3
1885		1		1	1	1	2		1				7	1894					2	1							3
1886		1			1					1			3	1895		1	1										2
1887				1	1		1					2	5	1896			2	1	2								5
1888	1				2	2		1	4				10	1897						2				1			3
1889			2	1	2								5	1898		2			1	2			1				6
1890					1	2		1					4	1899			1							1			2
1891			1		1								2	1900		2	1			1		1	1		1		7
1892			1	1		2	1				1	1	7														

Annual Meteorological Summary for the Years 1899 and 1900.

[λ=40° 10′ N.; φ=122° 15′ W.; gravity corr., −0.01.]

Month.	Pressure.			Temperature.							Moisture.								Cloudiness.		
		Extremes.		Mean.					Extremes.		Dew-point.		Relative humidity.		Vapor pressure.		Precipitation.				
	Monthly mean.	Maximum.	Minimum.	8 a. m.	8 p. m.	Maximum.	Minimum.	Monthly.	Maximum.	Minimum.	8 a. m.	8 p. m.	8 a. m.	8 p. m.	8 a. m.	8 p. m.	Total.	Maximum in 24 hours.	8 a. m.	8 p. m.	Daylight.
1899.	*In.*	*In.*	*In.*	°	°	°	°	°	°	°	°	°	%	%	*In.*	*In.*	*In.*	*In.*			
January	29.78	30.03	28.89	43.9	53.7	56.2	41.4	48.8	77	30	38	38	82	65	0.231	0.236	9.29	4.04	4.6	6.2	6.0
February	29.79	30.16	29.31	43.4	60.2	62.0	41.1	51.6	79	26	32	30	66	34	0.185	0.173	0.01	0.01	1.6	4.1	3.0
March	29.65	30.09	29.27	45.7	58.6	60.7	43.6	52.2	75	36	40	40	81	56	0.250	0.261	6.22	1.56	5.3	5.5	5.9
April	29.63	29.80	29.35	50.7	69.9	72.2	49.4	60.8	87	39	44	44	79	43	0.291	0.310	0.72	0.48	2.2	4.1	3.4
May	29.60	29.84	29.37	53.0	72.8	74.5	51.8	63.2	96	38	38	37	64	30	0.252	0.226	0.69	0.34	2.8	4.3	3.5
June	29.52	29.67	29.33	65.3	89.7	91.6	64.2	77.9	107	51	44	40	50	21	0.294	0.261	0.94	0.79	1.3	1.1	1.2
July	29.48	29.63	29.31	67.7	97.1	98.2	65.9	82.0	109	60	45	43	46	16	0.304	0.282	0.00	0.00	0.2	0.3	0.4
August	29.50	29.61	29.33	62.7	86.3	87.3	60.4	73.8	100	55	44	43	52	24	0.297	0.288	0.02	0.02	0.9	2.2	1.6
September	29.57	29.69	29.40	64.6	92.3	93.8	62.2	78.0	106	53	39	37	42	16	0.246	0.227	0.00	0.00	0.6	1.0	0.8
October	29.61	29.91	29.11	53.2	68.7	71.4	50.7	61.0	94	42	40	39	66	42	0.250	0.248	3.02	1.02	3.1	4.2	3.6
November	29.67	29.90	29.29	49.5	58.0	60.8	48.0	54.4	73	41	47	50	92	76	0.327	0.362	4.08	1.00	5.9	6.7	6.9
December	29.78	30.17	29.34	41.1	49.1	52.5	38.5	45.5	70	27	38	40	90	75	0.233	0.254	3.80	1.54	3.4	4.3	5.7
Year	29.63	30.17	28.89	53.4	71.4	73.4	51.4	62.4	109	26	41	40	68	42	0.263	0.261	28.79	4.04	2.7	3.7	3.5
1900.																					
January	29.78	29.99	29.45	49.9	62.6	54.4	43.2	48.8	69	33	43	45	93	78	0.277	0.303	4.15	1.58	4.6	4.2	6.6
February	29.77	30.02	29.47	45.1	58.2	59.5	42.7	51.1	73	35	40	42	83	60	0.248	0.275	1.62	0.69	2.8	5.2	4.9
March	29.62	29.93	29.40	50.1	67.4	68.6	48.6	58.6	84	38	42	45	78	50	0.278	0.314	2.38	0.83	3.8	4.8	4.2
April	29.59	29.78	29.33	49.2	65.8	67.9	47.3	57.6	84	39	41	40	76	43	0.261	0.259	2.69	0.90	2.7	4.4	3.8
May	29.58	29.75	29.37	56.5	76.7	78.5	55.4	67.0	92	46	45	42	69	34	0.304	0.279	1.18	0.43	3.6	4.3	3.9
June	29.51	29.73	29.35	64.5	87.9	90.4	63.1	76.8	104	53	50	49	60	30	0.363	0.356	0.94	0.54	2.0	3.0	2.2
July	29.44	29.70	29.23	68.6	96.8	98.2	67.0	82.6	109	60	48	45	48	18	0.334	0.303	0.00	.....	0.3	0.5	0.3
August	29.51	29.76	29.26	65.2	88.9	90.5	63.5	77.0	104	56	46	43	53	22	0.316	0.281	0.05	0.05	0.6	1.4	1.0
September	29.55	29.83	29.26	60.4	79.5	81.2	58.6	69.9	100	52	45	40	61	28	0.315	0.266	0.21	0.14	3.3	2.4	2.3
October	29.61	29.89	29.30	51.5	67.8	69.9	50.1	60.0	87	40	46	46	83	49	0.314	0.316	3.25	0.88	2.8	4.0	3.8
November	29.67	29.99	29.00	47.7	60.6	64.1	45.4	54.8	82	38	44	48	90	66	0.295	0.338	3.23	1.76	4.1	5.2	5.1
December	29.84	29.99	29.53	41.8	49.2	51.4	39.5	45.4	67	29	39	42	92	78	0.244	0.269	2.07	1.25	4.2	3.9	6.3
Year	29.62	30.02	29.00	53.8	71.0	72.9	52.0	62.5	109	29	44	44	74	46	0.296	0.297	21.77	1.76	2.9	3.6	3.7

Dates of First and Last Killing Frosts from 1882 to 1899, Inclusive.

Year	Last in spring.	First in autumn.	Year.	Last in spring.	First in autumn.	Year.	Last in spring.	First in autumn.
1882	Mar. 20	Nov. 12	1889	Feb. 17	Dec. 27	1895	Mar. 14	Nov. 25
1883	Feb. 17	Nov. 25	1890	Feb. 27	Dec. 10	1896	Apr. 19	Nov. 28
1884	Mar. 11	Dec. 11	1891	Feb. 25	Dec. 5	1897	Mar. 30	Nov. 7
1885	Feb. 9	Dec. 21	1892	Feb. 9	Nov. 24	1898	Mar. 24	Nov. 20
1886	Mar. 1	Nov. 21	1893	Mar. 13	Nov. 19	1899	Feb. 7	Dec. 19
1887	Feb. 27	Nov. 24	1894	Mar. 4	Nov. 23	1900	.....	Dec. 29
1888	Mar. 3	Dec. 6						

ANNUAL METEOROLOGICAL SUMMARY FOR THE YEARS 1899 AND 1900—Continued.

[H = 332 ft.; h_t = 54 ft.; h_r = 44 ft.; h_a = 58 ft.]

Month.	Wind.														Number of days.												
	By self-registers.					Number of winds, 8 a. m. and 8 p. m.												Precipitation.					Maximum temp.		Minimum temperature below 32°.	Electricity.	
	Average hourly velocity.	Prevailing direction.[a]	Maximum velocity.	Direction at time of maximum velocity.	Number of days with gales.	North.	Northeast.	East.	Southeast.	South.	Southwest.	West.	Northwest.	Calm.	Clear.	Partly cloudy.	Cloudy.	0.01 inch and over.	0.04 inch and over.	Snow.	Hail.	Fog.	Below 32°.	Above 90°.		Thunderstorms.	Auroras.
1899.	*Miles.*		*Mi.*																								
January	7.8	N.	36	SE.	0	21	0	0	8	8	4	3	18	0	10	6	15	13	13	0	0	3	0	0	4	0	0
February	8.6	N.	34	SE.	0	27	1	1	9	3	1	8	6	0	19	8	1	1	0	0	0	0	0	0	5	0	0
March	8.1	SE.	36	SE.	0	14	2	3	18	10	1	5	6	3	8	12	11	16	14	0	1	1	0	0	0	1	0
April	6.9	N.	34	NW.	0	15	0	2	10	14	0	7	12	0	18	7	5	4	3	0	0	0	0	0	0	0	0
May	7.5	SE.	30	SE.	0	18	2	5	21	3	2	4	7	0	19	7	5	6	4	0	0	0	0	1	0	0	0
June	7.9	N.	34	N.	0	26	1	2	12	3	1	1	14	0	27	1	2	2	2	0	0	0	0	18	0	0	0
July	5.1	SE.	24	N.	0	11	1	0	27	8	2	3	8	2	31	0	0	0	0	0	0	0	0	30	0	0	0
August	5.1	SE.	24	N.	0	9	0	1	31	10	2	2	6	1	24	7	0	1	0	0	0	0	0	8	0	0	0
September	5.4	N.	36	N.	0	18	4	2	17	5	1	0	13	0	30	0	0	0	0	0	0	0	0	22	0	0	0
October	7.4	N.	42	SE.	1	18	1	2	11	8	5	3	14	0	19	5	7	8	8	0	0	0	0	3	0	1	0
November	5.4	SE.	34	SE.	0	5	3	3	22	9	0	5	12	1	6	7	17	15	14	0	0	1	0	0	0	0	0
December	5.2	SE.	34	SE.	0	15	2	5	17	3	3	5	11	1	8	14	9	13	12	0	0	11	0	0	2	0	0
Year	6.8	SE.	42	SE.	1	197	17	26	203	84	22	46	127	8	219	74	72	79	70	0	1	16	0	82	11	2	0
1900.																											
January	4.6	SE.	26	N.	0	13	3	1	18	7	1	7	10	2	6	8	17	12	8	0	0	15	0	0	0	0	0
February	5.6	N.	34	N.	0	19	1	4	13	4	2	2	11	0	12	8	8	9	5	0	0	2	0	0	0	2	0
March	6.8	N.	35	SE.	0	21	0	1	19	7	3	3	8	0	15	9	7	7	6	0	0	0	0	0	0	1	0
April	7.5	N.	30	N.	0	21	0	1	18	4	2	6	8	0	18	5	7	10	8	0	0	0	0	0	0	0	0
May	5.9	N.	24	N.	0	20	6	1	18	5	2	0	9	1	17	7	7	5	5	0	0	0	0	3	0	1	0
June	5.2	SE.	25	N.	0	13	0	2	26	3	1	4	7	4	22	5	3	4	4	0	0	0	0	16	0	1	0
July	4.7	SE.	21	N.	0	16	3	8	20	6	0	3	6	0	31	0	0	0	0	0	0	0	0	29	0	0	0
August	5.4	SE.	24	N.	0	17	1	1	30	7	1	2	2	1	29	2	0	1	1	0	0	0	0	13	0	1	0
September	7.3	N.	37	N.	0	26	0	0	21	6	0	3	3	1	21	7	2	2	2	0	0	0	0	4	0	1	0
October	6.6	N.	35	SE.	0	23	1	1	18	4	0	1	11	3	18	4	9	9	8	0	0	0	0	0	0	0	0
November	4.4	N.	24	SE.	0	20	2	4	14	0	0	2	16	2	14	6	10	10	8	0	0	2	0	0	0	1	0
December	4.4	SE.	35	SE.	0	22	0	4	25	1	3	2	2	3	9	6	16	9	8	0	0	14	0	0	2	0	0
Year	5.7	SE.	37	N.	0	231	17	28	240	54	15	35	93	17	212	67	86	78	63	0	0	33	0	65	2	8	0

SACRAMENTO.

Excellent records of temperature and rainfall are available for the city of Sacramento. This city may in a climatological sense be called the most representative city of the great valley. San Francisco, Sacramento, and Stockton form as it were the three central points of the bay and valley district. It will be noticed that the mean annual temperatures are respectively about 56°, 60°, and 60°. In other words the valley cities have a mean annual temperature about 4° higher than the coast city has. In January the mean temperature of the interior cities is nearly 4° below that of San Francisco. In March it is slightly above. In April nearly 4° above, which increase continues until October. During July there is a difference of nearly 15°. While the annual rainfall at San Francisco is 23 inches, that at Sacramento is 19.21 inches, and at Stockton 15.54 inches. There is thus a gradual decrease in the rainfall from the coast inland. December is the month of heaviest rainfall at all stations and August the month of least precipitation. With regard to the seasonal rainfall it may be stated that years in which the rainfall is well distributed, particularly where good rains fall in March and April, are years of large wheat yields.

The following data, showing the temperature and weather conditions of Sacramento, were compiled by Mr. J. A. Barwick, of the Weather Bureau, from the records of Dr. T. A. Logan; Dr. F. M. Hatch; Mr. S. H. Gerrish; and the Weather Bureau.

MEAN MONTHLY AND ANNUAL TEMPERATURE (DEGREES FAHRENHEIT).

Years.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1853	43.0	50.0	59.8	61.0	68.0	77.0	75.0	71.0	76.0	78.0	53.0	48.0	63.3
1854	43.0	51.0	53.0	60.0	62.0	67.0	80.6	69.5	65.0	60.0	55.0	47.9	59.5
1855	43.7	52.5	54.8	58.1	60.2	71.1	72.6	73.0	68.0	63.0	50.6	46.0	59.5
1856	48.0	52.6	57.0	58.8	63.9	71.1	75.1	69.6	70.9	58.0	52.2	43.9	60.1
1857	48.5	50.2	56.4	63.3	65.5	71.9	71.4	71.3	67.9	61.5	53.2	47.4	60.7
1858	45.0	52.2	53.7	59.8	65.2	69.4	70.8	70.6	68.9	59.5	54.2	44.5	59.5
1859	44.9	50.5	51.5	57.1	63.0	74.8	69.1	67.2	65.9	63.3	54.0	43.5	58.7
1860	46.2	49.8	53.3	57.8	58.5	65.6	73.2	73.5	67.6	59.8	53.5	49.3	59.0
1861	47.1	52.2	55.0	60.6	63.7	66.2	73.6	69.7	67.8	59.9	53.6	50.9	60.1
1862	46.4	47.5	53.6	58.0	61.2	69.3	73.2	75.0	70.4	67.6	53.2	46.4	60.2
1863	46.9	48.0	57.6	59.5	67.1	69.1	75.6	70.7	69.0	62.8	52.7	46.5	60.4
1864	49.2	53.6	56.1	62.1	68.5	71.1	74.8	74.7	69.8	64.5	53.5	50.2	62.8
1865	47.4	49.0	53.6	59.4	70.2	73.5	74.0	71.7	68.8	63.1	56.9	44.1	61.0
1866	46.5	53.5	54.2	61.9	63.1	72.2	76.2	76.0	72.2	65.2	53.8	50.2	62.1
1867	48.2	47.8	50.7	59.7	64.4	70.3	73.8	71.7	68.8	62.7	54.8	46.8	59.9
1868	47.0	50.5	55.0	60.1	64.2	69.5	73.8	71.2	68.3	62.0	53.9	47.0	60.1
1869	47.6	49.9	53.6	59.0	64.2	70.8	74.4	71.3	69.9	63.1	54.0	46.5	60.4
1870	48.6	51.1	53.0	57.0	61.0	69.3	71.8	72.6	68.0	63.6	53.4	45.5	59.6
1871	48.3	49.4	56.0	59.2	61.5	70.1	70.2	72.0	67.4	62.2	50.2	48.7	59.6
1872	48.5	53.3	56.8	57.6	67.0	69.2	71.4	73.1	68.8	58.9	51.2	49.0	60.4
1873	52.7	48.2	56.8	60.0	67.9	71.7	73.2	66.3	69.9	61.4	57.5	47.7	60.7
1874	45.7	49.3	52.9	59.5	64.7	70.2	72.8	70.9	70.7	61.7	53.9	45.0	59.8
1875	46.9	52.7	58.7	63.0	68.1	70.6	73.3	72.5	65.7	69.9	56.7	48.0	62.2
1876	48.8	50.2	54.6	59.5	65.7	76.9	74.0	72.8	70.1	63.5	53.3	45.5	61.2
1877	49.1	55.0	59.0	60.2	64.5	72.5	75.6	73.0	72.3	62.1	53.5	47.8	62.0
1878	48.6	51.0	56.5	58.9	65.6	72.2	73.6	73.7	68.7	61.9	54.3	46.0	60.9
1879	44.8	54.4	57.0	60.4	60.8	72.8	72.6	75.6	71.8	61.3	50.8	43.5	60.4
1880	43.0	45.7	49.2	55.0	62.0	67.8	72.7	71.1	69.1	62.4	49.3	50.0	58.1
1881	49.0	53.5	55.8	62.3	66.6	68.2	73.0	70.4	68.9	57.6	50.2	46.2	60.1
1882	45.8	46.5	53.6	56.6	65.0	69.6	75.3	74.1	69.9	58.8	49.6	47.9	59.4
1883	41.8	45.9	58.2	56.6	63.6	74.1	75.7	74.0	73.5	59.0	51.2	44.8	59.9
1884	46.8	47.5	53.7	57.6	65.6	67.0	72.7	74.9	66.6	60.8	56.1	48.9	59.8
1885	47.3	54.4	60.4	61.3	67.3	67.9	73.0	75.9	72.2	65.6	54.8	49.3	62.5
1886	46.2	54.2	52.5	56.8	63.8	71.2	74.3	74.4	70.6	58.8	50.8	49.9	60.3
1887	48.6	44.9	58.2	59.2	63.2	69.8	71.4	69.8	70.8	66.5	54.5	46.5	60.3
1888	42.8	53.0	53.6	63.0	62.7	68.0	73.3	76.8	75.5	65.2	54.2	48.5	61.4
1889	44.7	50.2	57.4	61.2	64.2	70.1	72.8	74.0	71.9	61.7	54.2	48.5	60.9
1890	42.6	47.4	52.6	59.0	65.4	67.8	73.8	72.8	70.4	63.4	54.8	43.2	59.4
1891	46.9	48.2	56.0	57.0	62.7	69.0	76.4	76.1	69.8	64.5	55.9	44.2	60.6
1892	48.4	52.2	55.9	55.4	63.2	68.0	72.0	73.0	68.8	62.0	55.3	48.2	60.2
1893	42.1	48.3	52.0	55.7	63.7	68.5	74.0	74.1	65.4	60.2	53.6	48.6	58.8
1894	44.4	47.2	53.3	61.3	63.7	64.8	74.0	74.6	71.8	63.4	58.2	46.9	60.3
1895	46.4	53.4	53.5	58.4	63.6	72.9	71.4	72.6	67.0	64.7	53.1	44.8	60.2
1896	50.2	54.1	55.4	53.3	60.0	71.5	76.5	72.0	68.0	65.4	52.6	49.4	60.7
1897	44.2	48.8	49.4	62.6	67.0	69.8	75.6	73.4	69.6	60.7	50.8	45.4	59.8
1898	42.0	51.8	51.9	61.4	59.9	69.6	74.2	73.8	68.8	63.4	53.4	44.2	59.5
1899	49.0	51.5	52.8	59.4	59.3	71.2	72.1	68.0	72.9	60.4	54.9	43.9	59.6
1900	47.2	51.7	57.3	56.7	64.5	69.4	73.6	70.2	67.0	60.8	55.2	45.2	59.9
Means for 48 years	47.5	51.2	55.0	58.5	62.7	70.3	73.1	70.3	69.8	61.3	54.5	45.4	60.0

Maximum and Minimum Temperatures.

Year.	Number of days maximum temperature 90° or above.						Number of days minimum temperature 35° or below.					Number of days minimum temperature 40° or below.
	May.	June.	July.	Aug.	Sept.	Oct.	Dec.	Jan.	Feb.	Mar.	Apr.	Nov.
1877	.....	.....	22	18	13	0	12	.....	.....	.....	.....	3
1878	1	9	14	13	6	0	18	8	0	1	0	6
1879	1	11	13	18	11	0	12	17	2	1	0	13
1880	0	0	6	7	4	0	0	13	13	18	2	18
1881	0	3	11	5	7	0	8	1	0	8	0	13
1882	2	5	19	14	9	0	4	16	10	8	1	14
1883	3	12	16	17	10	0	15	18	15	0	2	14
1884	0	2	8	14	1	0	7	11	11	5	1	5
1885	4	3	11	20	13	4	0	1	0	0	1	2
1886	2	6	14	17	9	0	6	10	0	5	3	24
1887	3	10	14	10	11	4	11	10	0	0	0	11
1888	1	3	17	23	17	1	0	16	2	8	0	9
1889	4	8	14	21	11	2	1	11	6	0	0	5
1890	3	5	14	13	8	0	9	13	4	4	0	16
1891	0	6	23	23	8	2	14	9	7	1	1	11
1892	4	9	14	16	6	2	9	4	6	4	4	10
1893	0	5	15	16	0	0	5	6	3	8	3	10
1894	0	1	20	17	15	2	4	11	5	7	2	4
1895	2	12	8	15	6	0	12	5	0	6	0	6
1896	2	9	18	10	2	1	1	5	0	6	6	8
1897	1	9	20	14	8	0	16	5	2	10	0	15
1898	0	9	19	14	10	0	15	25	1	16	1	13
1899	1	11	13	3	20	2	8	4	7	6	0	18
1900	1	5	16	6	2	0	4	0	1	1	1	3

Summaries of Monthly Means and Extremes of Temperature.

Month.	Highest monthly mean.		Lowest monthly mean.		Absolute maximum.		Absolute minimum.		Greatest daily range.	Mean daily range.	Mean variability.	Mean of 3 consecutive warmest days.	Mean of 3 consecutive coldest days.
	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.					
January	52.7	1873	41.8	1883	72.0	30, 1899	[a] 19.0	14–15, 1888	30.0	14.5	2.5	52.8	39.5
February	55.0	1877	45.7	1880	80.0	18, 1899	21.0	13, 1884	35.0	16.4	2.4	56.6	43.3
March	60.4	1885	49.2	1880	80.0	30, 1882	29.0	15, 1880	34.0	17.0	2.3	68.8	48.1
April	63.3	1857	53.3	1896	89.0	28, 1888	[b] 36.0	17, 1892	37.0	20.2	3.0	62.0	51.8
May	70.2	1865	58.5	1860	[c] 98.0	26, 1883	[d] 39.0	12, 1880	41.0	22.4	3.1	75.0	55.9
June	77.0	1853	64.8	1894	106.0	30, 1891	44.0	1, 1890	42.0	26.3	3.2	78.3	62.2
July	80.6	1854	69.1	1859	106.0	21, 1891	48.0	17, 1887	44.0	30.3	3.0	81.7	67.1
August	76.8	1888	66.3	1873	110.0	11, 1898	48.0	30, 1887	44.0	31.3	2.9	81.5	67.1
September	76.0	1853	65.0	1854	106.0	11, 1888	[e] 44.0	18, 1882	44.0	28.5	2.8	77.2	62.9
October	78.0	1853	57.6	1881	98.0	3, 1885	36.0	14, 1881	39.0	24.7	2.5	69.8	55.1
November	58.2	1894	49.3	1880	[f] 78.0	1, 1890	27.0	28, 1880	36.0	21.3	2.5	60.4	42.0
December	50.9	1861	43.2	1890	69.0	8–9, 1893	[g] 24.0	29, 1878	32.0	14.0	2.7	54.4	40.5
Annual	80.6	1854	41.8	1883	110.0	(h)	[a] 19.0	(i)	44.0	22.2	2.7	67.8	53.0

[a] Also January, 1854.
[b] Also April 15, 1896.
[c] Also May 29, 1885, and May 28, 1887.
[d] Also May 7, 1887, and May 9, 1896.
[e] Also September 12, 1893.
[f] Also November 4, 1892, and November 7, 1894.
[g] Also December 14, 1883.
[h] August 11, 1898.
[i] January 14–15, 1888.

WEATHER.

Month.	Average number of—				Month.	Average number of—			
	Clear days.	Partly cloudy days.	Cloudy days.	Rainy days.		Clear days.	Partly cloudy days.	Cloudy days.	Rainy days.
January	12	8	11	9	August	29	2	0	0
February	12	9	7	8	September	25	4	1	2
March	14	9	8	5	October	22	7	2	3
April	15	10	5	6	November	18	7	5	6
May	19	8	4	4	December	11	9	11	9
June	23	5	2	1	Annual	229	80	56	53
July	29	2	0	0					

DATES OF FIRST AND LAST LIGHT AND KILLING FROSTS, WITH LOWEST TEMPERATURE AND SNOWFALL, AND DATES OF BLOOMING FRUIT TREES, FROM 1869 TO 1901.

[From the records of Mr. Samuel H. Gerrish, voluntary observer of the Weather Bureau.]

Year.	First light frost of season.		First killing frost of season.		Last light frost of season.		Last killing frost of season.		First appearance of blossoming fruit trees.
	Date.	Minimum temperature.	Date.	Minimum temperature.	Date.	Minimum temperature.	Date.	Minimum temperature.	
		°F.		°F.		°F.		°F.	
1869–70	Nov. 8, 1869	40.0	Nov. 30, 1869	31.0	May 17, 1870	41.0	Mar. 8, 1870	31.0	Feb. 21, 1870
1870–71	Oct. 24, 1870	36.0	Oct. 27, 1870	30.0	Apr. 19, 1871	40.0	Mar. 18, 1871	31.0	Feb. 8, 1871
1871–72	Oct. 25, 1871	37.0	Nov. 6, 1871	30.0	Apr. 12, 1872	38.0	Jan. 9, 1872	27.0	Feb. 26, 1872
1872–73	Oct. 22, 1872	37.0	Nov. 10, 1872	27.0	Apr. 6, 1873	34.0	Apr. 5, 1873	27.0	Feb. 16, 1873
1873–74	Oct. 16, 1873	33.0	Oct. 17, 1873	31.0	Apr. 14, 1874	38.0	Mar. 19, 1874	28.0	Feb. 14, 1874
1874–75	Oct. 29, 1874	39.0	Nov. 20, 1874	29.0	Apr. 7, 1875	31.0	Apr. 6, 1875[a]	24.0	Feb. 21, 1875
1875–76	Oct. 28, 1875	38.0	(b)	35.0	Apr. 8, 1876	38.0	Jan. 16, 1876	29.0	Feb. 20, 1879
1876–77	Nov. 3, 1876	36.0	Nov. 13, 1876	29.0	Apr. 23, 1877	42.0	Feb. 11, 1877	32.0	Feb. 2, 1877
1877–78	Oct. 31, 1877	33.0	Nov. 1, 1877	31.0	Mar. 9, 1878	39.0	Jan. 12, 1878	30.0	Feb. 1, 1878
1878–79	Oct. 18, 1878	37.0	Oct. 28, 1878	29.0	Apr. 15, 1879	41.0	Feb. 6, 1879	27.0	Feb. 15, 1879
1879–80	Nov. 8, 1879	39.0	Nov. 27, 1879	25.0	Apr. 18, 1880	37.0	Mar. 30, 1880	28.0	Feb. 29, 1880
1880–81	Oct. 31, 1880	35.0	Nov. 13, 1880	28.0	Mar. 18, 1881	33.0	Mar. 17, 1881	31.0	Feb. 22, 1881
1881–82	Oct. 4, 1881	36.0	Nov. 11, 1881	30.0	May 15, 1882	41.0	Mar. 9, 1882	29.0	Feb. 28, 1882
1882–83	Oct. 5, 1882	42.0	Nov. 13, 1882	27.0	May 2, 1883	41.0	Feb. 18, 1883	29.0	Feb. 19, 1883
1883–84	Oct. 16, 1883	39.0	Nov. 4, 1883	31.0	Apr. 17, 1884	43.0	Feb. 18, 1884	31.0	Feb. 20, 1884
1884–85	Sept. 30, 1884	41.0	Nov. 30, 1884	31.0	Apr. 22, 1885	41.0	Jan. 26, 1885	31.0	Feb. 10, 1885
1885–86	Oct. 11, 1885	38.0	(c)	34.0	Apr. 14, 1886	39.0	Jan. 10, 1886	27.0	Feb. 8, 1886
1886–87	Oct. 9, 1886	40.0	Nov. 4, 1886	32.0	May 10, 1887	34.0	Feb. 26, 1887	26.0	Jan. 28, 1887
1887–88	Oct. 20, 1887	37.0	Nov. 25, 1887	28.0	Apr. 26, 1888	38.0	Feb. 3, 1888	28.0	Feb. 20, 1888
1888–89	Oct. 19, 1888	37.0	Nov. 6, 1888	28.0	Mar. 19, 1889	34.0	Feb. 19, 1889	26.0	Feb. 3, 1889
1889–90	Oct. 29, 1889	36.0	Dec. 29, 1889	27.0	Apr. 14, 1890	35.0	Feb. 28, 1890	25.0	Feb. 13, 1890
1890–91	Oct. 11, 1890	34.0	Nov. 7, 1890	28.0	Mar. 30, 1891	34.0	Feb. 25, 1891	26.0	Feb. 17, 1891
1891–92	Oct. 29, 1891	36.0	Nov. 14, 1891	30.0	May 11, 1892	34.0	Apr. 26, 1892	32.0	Feb. 16, 1892
1892–93	Oct. 13, 1892	36.0	Nov. 16, 1892	29.0	Apr. 12, 1893	33.0	Mar. 13, 1893	28.0	Feb. 16, 1893
1893–94	Oct. 11, 1893	34.0	Nov. 3, 1893	28.0	May 16, 1894	37.0	Mar. 4, 1894	30.0	Feb. 12, 1894
1894–95	Oct. 28, 1894	39.0	Dec. 25, 1894	31.0	Apr. 12, 1895	41.0	Feb. 5, 1895	33.0	Feb. 13, 1895
1895–96	Nov. 4, 1895	36.0	Nov. 24, 1895	30.0	May 17, 1896	41.0	Mar. 4, 1896	32.0	Feb. 1, 1896
1896–97	Oct. 13, 1896	41.0	Nov. 26, 1896	32.0	Apr. 2, 1897	39.0	Feb. 23, 1897	30.0	Feb. 16, 1897
1897–98	Oct. 15, 1897	41.0	Nov. 8, 1897	32.0	Apr. 7, 1898	39.0	Mar. 26, 1898	30.0	Feb. 16, 1898
1898–99	Oct. 1, 1898	40.0	Nov. 23, 1898	32.0	May 18, 1899	42.0	Feb. 9, 1899	30.0	Feb. 14, 1899
1899–1900	Oct. 15, 1899	38.0	(d)	34.0	Apr. 13, 1900	40.0	(e)	34.0	Feb. 8, 1900
1900–1901	Oct. 29, 1900	41.0	Dec. 28, 1900	32.0	Apr. 10, 1901	40.0	Apr. 4, 1901	33.0	Feb. 10, 1901

[a] Coldest ever known.
[b] No killing frost; coldest on December 21, 1875.
[c] No killing frost; coldest on December 28, 1885.
[d] No killing frost; coldest December 19, 1899.
[e] No killing frost; coldest February 8, 1900.

Dates of snowfall in Sacramento, and the amount precipitated.—January 29, 1862, 0.75 of an inch. January 12, 1868, 1.62 inches. December 3, 1873, 6 inches. April 5, 1875, a trace; enough to whiten the ground before it melted. This was the coldest April ever known. A very light trace on January 13, 1879. January 26, 1880, estimated about 0.25 of an inch; it mostly melted as it fell. February 17 and 18, 1882, trace. December 31, 1882, estimated about 4 inches; measured 1.50 inches actual measurement. February 1 and 6, 1883, a very light fall of snow. January 4, 1888, 2.89 inches. January 5, 1888, 3 inches. The snow that fell on the 5th was very damp, and packed hard; if it had been as light as that on the 4th, I think we would have had over 6 inches. January 16, 1888, a trace. January 12 and 21, 1890, a few flakes of snow, melting as fast as they fell. March 2, 1896, during the rain the air was filled with large flakes of snow for ten minutes, which melted as it fell. A few flakes of snow fell February 2, 1899.

Mr. Gerrish states that the frost of April 4, 1901, did more damage than the frost on February 11, 1901, when the temperature fell to 32°.

MONTHLY, ANNUAL, AND SEASONAL PRECIPITATION (INCHES AND HUNDREDTHS).

[From Dr. T. M. Logan, Dr. F. W. Hatch, and Weather Bureau Records.]

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Season of—	Seasonal.	Annual.
1849	.....	.....	.....	.....	.....	.....	.....	.....	0.25	1.50	2.25	12.50	.....	.....	.....
1850	4.50	0.50	10.00	4.25	0.25	.....	.....	.....	.....	.....	T.	T.	1849-50	36.00	19.50
1851	0.65	0.35	1.88	1.14	0.69	.....	.....	.....	1.00	0.18	2.14	7.07	1850-51	4.71	15.10
1852	0.58	0.12	6.40	0.19	0.30	.....	.....	.....	T.	.....	6.00	13.40	1851-52	17.98	26.99
1853	3.00	2.00	7.00	3.50	1.45	T.	T.	.....	T.	T.	1.50	1.54	1852-53	36.35	19.99
1854	3.25	8.50	3.25	1.50	0.21	0.31	.....	T.	T.	1.01	0.65	1.15	1853-54	20.06	19.83
1855	2.67	3.46	4.20	4.32	1.15	0.01	.....	.....	T.	.....	0.75	2.00	1854-55	18.62	18.56
1856	4.92	0.69	1.40	2.13	1.84	0.03	.....	.....	T.	0.20	0.65	2.40	1855-56	13.76	14.26
1857	1.38	4.80	0.68	T.	T.	0.35	.....	T.	.....	0.66	2.41	2.68	1856-57	10.46	12.91
1858	2.44	2.46	2.88	1.21	0.20	0.10	0.01	T.	T.	3.01	0.15	4.34	1857-58	14.99	16.80
1859	0.96	3.91	1.64	0.98	1.04	.....	.....	.....	0.02	.....	6.48	1.83	1858-59	16.04	16.86
1860	2.31	0.98	5.11	2.87	2.49	0.02	0.63	.....	0.06	0.91	0.18	4.28	1859-60	22.06	19.79
1861	2.67	2.92	3.32	0.48	0.59	0.14	0.55	.....	.....	T.	2.17	8.64	1860-61	16.18	21.48
1862	15.04	4.26	2.80	0.82	1.81	0.01	.....	0.01	.....	0.36	T.	2.33	1861-62	36.10	27.44
1863	1.73	2.75	2.36	1.69	0.36	.....	.....	.....	T.	.....	1.49	1.82	1862-63	11.59	12.20
1864	1.08	0.19	1.30	1.08	0.74	0.09	.....	0.08	T.	0.12	6.72	7.87	1863-64	7.79	19.27
1865	4.78	0.71	0.48	1.37	0.46	.....	T.	.....	0.08	0.48	2.43	0.36	1864-65	22.59	11.15
1866	7.70	2.01	2.02	0.48	2.25	0.10	0.02	.....	.....	T.	2.43	9.51	1865-66	17.91	26.52
1867	3.44	7.10	1.01	1.80	0.01	.....	.....	.....	0.01	.....	3.81	12.85	1866-67	25.32	30.03
1868	6.04	3.15	4.35	2.31	0.27	T.	.....	.....	.....	.....	0.77	2.61	1867-68	32.79	19.50
1869	4.79	3.63	2.94	1.24	0.65	0.01	.....	.....	T.	2.12	0.85	1.96	1868-69	16.64	18.19
1870	1.37	3.24	1.64	2.12	0.27	T.	T.	T.	.....	0.02	0.58	0.97	1869-70	13.57	10.21
1871	2.08	1.92	0.69	1.45	0.76	T.	.....	.....	T.	0.21	1.22	10.59	1870-71	8.47	18.92
1872	4.04	4.74	1.94	0.61	0.28	0.02	.....	.....	T.	0.22	1.93	5.39	1871-72	23.65	19.17
1873	1.23	4.36	0.55	0.51	.....	T.	0.02	T.	.....	0.31	1.21	10.01	1872-73	14.19	18.20
1874	5.20	1.86	3.05	0.89	0.37	T.	T.	.....	0.05	2.26	3.80	0.44	1873-74	22.92	17.92
1875	8.70	0.55	0.80	T.	T.	1.10	.....	.....	.....	0.44	6.20	5.52	1874-75	17.70	23.31
1876	4.99	3.75	4.15	1.10	0.15	.....	0.21	0.02	T.	3.45	0.30	.....	1875-76	26.30	18.12
1877	2.77	1.04	0.56	0.19	0.64	0.01	T.	T.	.....	0.73	1.07	1.43	1876-77	9.19	8.44
1878	9.26	8.04	3.09	1.07	0.17	.....	.....	.....	0.29	0.55	0.51	0.47	1877-78	24.86	23.45
1879	3.18	3.88	4.88	2.66	1.30	0.13	T.	T.	.....	0.88	2.05	3.41	1878-79	17.85	22.37
1880	1.64	1.83	1.70	14.20	0.76	.....	T.	.....	.....	.....	0.05	11.81	1879-80	26.47	31.99
1881	6.14	5.06	1.37	1.64	T.	0.50	T.	.....	0.30	0.55	1.88	3.27	1880-81	26.57	20.71
1882	1.89	2.40	3.78	1.99	0.85	0.10	T.	.....	0.57	2.68	3.22	1.13	1881-82	16.51	18.06
1883	2.23	1.11	3.70	0.67	2.85	.....	.....	.....	0.90	0.97	0.61	0.44	1882-83	18.11	13.48
1884	3.43	4.46	8.14	4.32	0.06	1.45	.....	T.	0.60	2.01	.....	10.45	1883-84	24.78	34.92
1885	2.16	0.49	0.08	0.68	T.	0.11	T.	.....	0.08	0.02	11.34	5.76	1884-85	16.58	20.72
1886	7.95	0.29	2.68	4.08	0.07	.....	.....	.....	.....	0.68	0.21	2.21	1885-86	32.27	18.17
1887	1.12	6.28	0.94	2.53	T.	.....	.....	T.	0.02	.....	0.45	2.09	1886-87	13.97	13.43
1888	4.81	0.57	3.04	0.10	0.40	0.08	T.	T.	0.55	.....	4.28	4.63	1887-88	11.56	18.46
1889	0.15	0.33	6.25	0.26	3.25	0.25	.....	.....	.....	6.02	3.15	7.82	1888-89	19.95	27.48
1890	6.62	4.06	3.00	1.33	1.80	.....	.....	T.	0.80	T.	.....	3.34	1889-90	33.80	20.95
1891	0.53	6.61	1.78	2.04	0.66	0.05	T.	.....	0.10	0.10	0.48	3.28	1890-91	15.81	15.63
1892	1.78	2.84	3.02	1.20	2.38	T.	.....	.....	0.18	0.70	6.60	4.90	1891-92	15.18	23.60
1893	3.27	2.66	3.51	1.08	1.05	.....	T.	T.	0.22	0.12	2.92	1.76	1892-93	23.95	16.59
1894	4.17	3.92	0.74	0.34	1.70	0.46	T.	T.	0.88	1.06	0.48	8.86	1893-94	16.35	22.61
1895	8.42	1.84	1.20	0.86	0.51	.....	0.04	T.	1.26	0.17	1.54	1.54	1894-95	24.11	17.38
1896	9.76	0.09	2.57	5.34	0.92	.....	T.	0.20	0.31	0.55	3.56	1.76	1895-96	23.23	25.06
1897	3.66	4.15	2.54	0.25	0.30	0.04	.....	0.01	0.16	1.96	0.61	1.64	1896-97	17.32	15.32
1898	0.98	3.19	0.04	0.28	1.50	0.14	.....	.....	0.36	0.64	0.61	2.30	1897-98	10.51	10.04
1899	3.94	0.04	6.02	0.10	0.54	0.49	0	0.02	0	4.46	2.62	2.91	1898-99	15.04	21.14
1900	3.54	0.32	1.61	1.88	2.88	T.	T.	0	0.06	1.74	4.50	1.38	1899-1900	20.24	17.91
1901	3.70	5.32	0.48	2.23	0.80	T.	0	T.	0	1.67	2.02	2.91	1900-1901	20.21	17.88
Averages for 52 years..	3.82	2.80	2.78	1.76	0.84	0.12	.....	.....	.....	.....	.....	.....	.....	.....	[a] 19.41

[a] Average for fifty-one years.

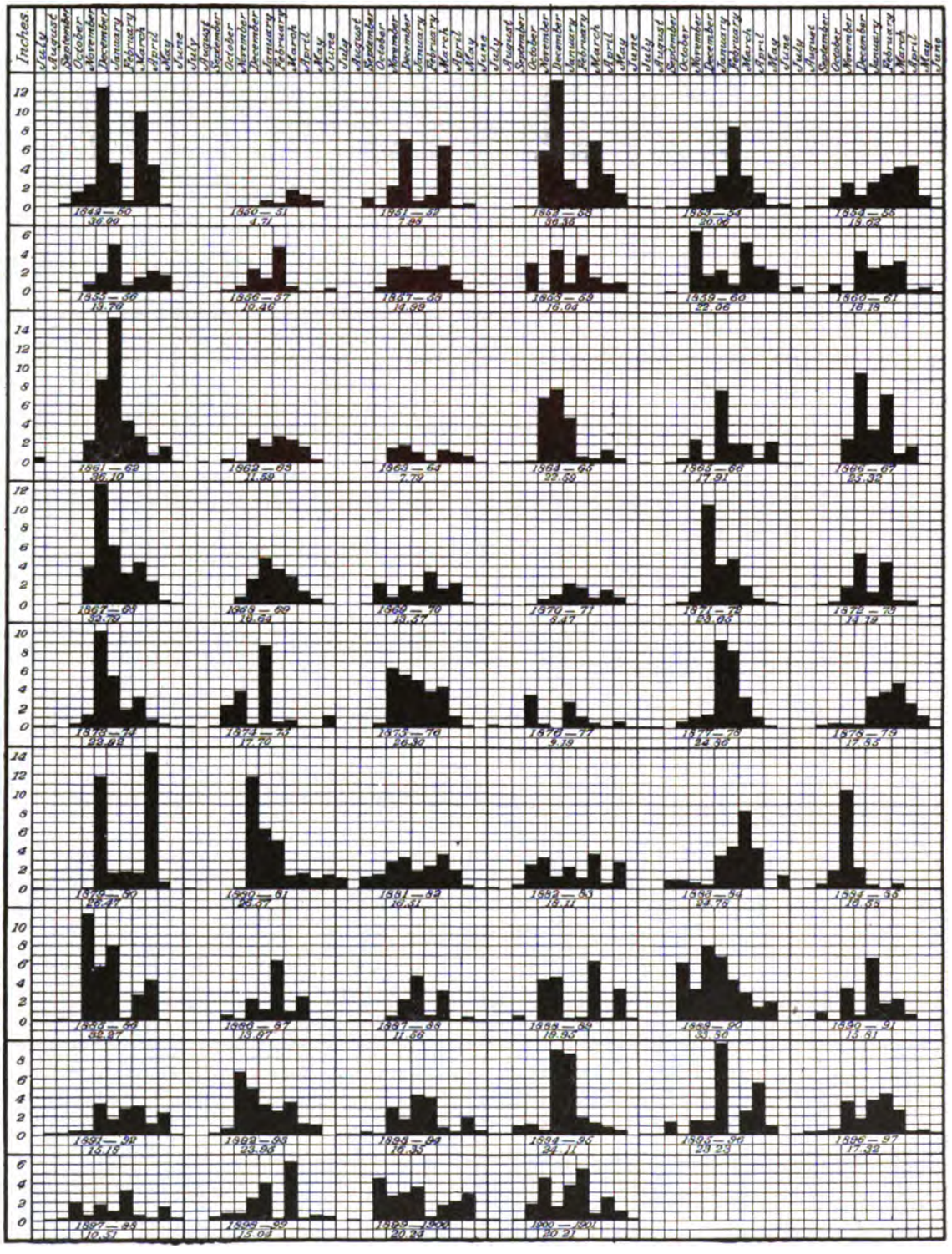

FIG. 11.—Seasonal rainfall at Sacramento, Cal., from 1849 to 1901.

GREATEST PRECIPITATION (INCHES AND HUNDREDTHS) IN TWENTY-FOUR HOURS.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Greatest Annual.
1877	.....	.....	.....	.....	.....	.....	T.	T.	0.00	0.58	0.81	0.62	.....
1878	1.63	1.01	0.79	0.65	0.11	0.00	0.00	0.00	0.13	0.55	0.32	0.35	1.63
1879	0.77	1.40	1.97	0.71	0.72	0.13	T.	T.	0.00	0.55	0.41	1.47	1.97
1880	1.25	1.02	0.49	7.24	0.65	0.00	T.	0.00	0.00	0.00	0.05	1.96	7.24
1881	2.66	1.72	0.46	0.76	T.	0.45	T.	0.00	0.30	0.25	1.10	1.41	2.66
1882	0.57	0.65	1.30	0.60	0.35	0.10	T.	0.00	0.31	1.82	1.16	0.40	1.82
1883	1.90	0.98	1.61	0.32	1.15	0.00	0.00	0.00	0.77	0.80	0.55	0.25	1.90
1884	1.00	1.36	2.94	1.37	0.03	0.82	0.00	T.	0.30	1.70	0.00	2.44	2.94
1885	1.10	0.28	0.07	0.51	T.	0.10	T.	0.00	0.08	0.01	4.29	2.81	4.29
1886	2.50	0.20	1.15	1.15	0.06	0.00	0.00	0.00	0.00	0.43	0.21	0.84	2.50
1887	0.90	2.48	0.65	1.47	T.	0.00	0.00	T.	0.02	0.00	0.28	0.88	2.48
1888	1.90	0.20	0.90	0.09	0.36	0.04	T.	T.	0.43	0.00	2.12	1.10	2.12
1889	0.08	0.20	2.57	0.14	1.94	0.25	0.00	0.00	0.00	1.86	0.96	0.98	2.57
1890	1.40	1.80	0.81	0.94	0.82	0.00	0.00	T.	0.80	T.	0.00	2.35	2.35
1891	0.38	2.14	0.96	0.70	0.52	0.05	T.	0.00	0.06	0.06	0.26	0.86	2.14
1892	1.00	1.10	0.94	0.54	1.16	T.	0.00	0.00	0.14	0.32	3.26	1.86	3.26
1893	1.06	0.92	1.18	0.80	0.78	0.00	T.	T.	0.16	0.12	1.04	0.76	1.18
1894	2.25	2.20	0.32	0.20	0.72	0.38	T.	T.	0.88	0.40	0.48	1.32	2.25
1895	2.66	1.34	0.42	0.60	0.16	0.00	0.04	T.	0.73	0.14	0.52	0.47	2.66
1896	1.84	0.08	0.84	2.18	0.56	0.00	T.	0.20	0.24	0.45	1.60	0.54	2.18
1897	1.36	1.25	1.20	0.14	0.30	0.04	0.00	0.01	0.16	1.18	0.28	1.04	1.36
1898	0.40	1.12	0.04	0.24	1.00	0.14	0.00	0.00	0.36	0.34	0.50	1.00	1.12
1899	1.10	0.04	2.20	0.09	0.44	0.45	0.00	0.02	0.00	2.08	0.62	1.00	2.20
1900	1.52	0.16	0.80	0.90	1.60	T.	T.	0.00	0.06	0.60	2.32	0.54	2.32
Greatest	2.66	2.48	2.94	7.24	1.94	0.82	0.04	0.20	0.88	1.86	4.29	2.96	7.24
Date	29, 1881; 3-4, 1895	4-5	8-9	21	5	11-12	4	30	29	21-22	17-18	2	April 21
Year	1881-95	1887	1884	1880	1889	1884	1895	1896	1894	1889	1885	1880	1880

DATES WHEN PRECIPITATION EQUALED OR EXCEEDED 2.50 INCHES IN ANY CONSECUTIVE TWENTY-FOUR HOURS.

	Inches.
April 19, and 20, 1880, from 8.02 p. m. 19 to 8.02 p. m. 20	5.28
April 20 and 21, 1880, from 8.02 p. m. 20 to 9.55 a. m. 21	3.09
December 1 and 2, 1880, from 12.02 p. m. 1 to 12.02 p. m. 2	2.58
January 28 and 29, 1881, from 8.02 p. m. 28 to 8.02 p. m. 29	2.66
March 8 and 9, 1884, from 3 p. m. 8 to 7 a. m. 9	2.94
November 17 and 18, 1885, from 8.30 a. m. 17 to 7 a. m. 18	4.29
December 21, 1885, from 4 a. m. 21 to 2.55 p. m. 21	2.81
January 23, 1886, from 8.30 a. m. 23 to 11 p. m. 23	2.50
March 12 and 13, 1889, from 4 p. m. 12 to 9 a. m. 13	2.57
November 29 and 30, 1892, from 10 p. m. 29 to 8 p. m. 30	3.26
January 3 and 4, 1895, from 6.20 p. m. 3 to 6.20 p. m. 4	2.66

MONTHLY EXTREMES OF PRECIPITATION.

Month.	Greatest monthly precipitation.		Least monthly precipitation.		Number of times monthly precipitation has exceeded normal in 50 years.		Total.	Month.	Greatest monthly precipitation.		Least monthly precipitation.		Number of times monthly precipitation has exceeded normal in 50 years.		Total.
	Amount.	Date.	Amount.	Date.	In first 25 years.	In second 25 years.			Amount.	Date.	Amount.	Date.	In first 25 years.	In second 25 years.	
	Inches.		*Inches.*						*Inches.*		*Inches.*				
January	15.04	1862	0.15	1889	9	11	20	July	0.63	1860	0.00	(a)	2	2	4
February	8.50	1854	0.04	1899	12	11	23	August	0.20	1896	0.00	(a)	1	2	3
March	10.00	1850	0.04	1898	11	12	23	September	1.26	1895	0.00	.....	2	12	14
April	14.20	1880	T.	1857; 1875	8	8	16	October	6.02	1889	0.00	.....	6	8	14
May	3.25	1889	0.00	(a)	7	9	16	November	11.34	1885	0.00	1884; 1890	11	8	19
June	1.45	1884	0.00	(a)	8	8	11	December	13.40	1852	0.00	1876	10	8	18

(a) Many years.

Average Hourly Wind Velocity (Miles per Hour).

[Record began July 1, 1877, to December 31, 1900.]

Hour.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
A. M.												
1	6.7	7.0	7.2	7.3	8.0	9.6	8.1	7.4	6.8	5.9	5.5	6.2
2	6.7	7.0	7.2	7.0	7.4	7.9	7.6	7.2	6.3	5.6	5.6	6.3
3	6.6	6.9	7.2	6.8	7.2	7.7	7.7	7.4	6.4	5.6	5.6	6.4
4	6.6	7.1	7.2	6.7	7.2	7.6	7.8	7.4	6.6	5.7	5.6	6.5
5	6.5	7.1	7.1	7.0	7.2	7.6	7.8	7.5	6.5	5.8	5.5	6.5
6	6.5	7.1	7.1	6.8	7.2	7.3	7.4	7.2	6.3	5.4	5.3	6.5
7	6.4	7.0	7.1	6.7	7.3	7.3	7.1	6.9	6.0	5.5	5.2	6.3
8	6.4	6.9	7.1	6.6	7.1	7.0	6.8	6.4	5.7	5.4	5.2	6.3
9	6.4	6.6	6.8	6.3	6.8	6.8	6.5	6.0	5.6	5.3	5.2	6.4
10	6.4	6.6	7.0	6.4	7.0	7.1	6.5	5.6	5.4	5.1	5.1	6.5
11	6.5	6.7	7.0	7.2	7.7	7.3	6.6	5.5	5.5	5.1	5.1	6.4
12 (noon)	6.7	7.1	7.9	8.1	8.3	7.5	6.6	5.4	5.8	5.5	5.8	6.7
P. M.												
1	7.1	7.7	8.8	8.5	8.7	7.9	6.7	5.6	6.2	6.1	5.8	7.1
2	7.1	8.2	9.0	9.1	9.0	8.2	6.9	5.8	6.6	6.5	6.3	7.2
3	8.1	8.8	9.4	9.6	9.4	8.2	7.2	6.1	6.8	6.9	6.6	7.8
4	8.2	9.0	9.7	9.7	9.7	8.8	7.4	6.2	6.9	7.2	6.8	7.9
5	8.1	9.0	9.8	9.7	9.9	9.3	7.9	6.7	7.0	7.1	6.9	7.8
6	8.0	9.0	9.6	9.7	10.1	9.8	8.5	7.2	7.1	6.9	6.6	7.5
7	7.8	8.6	9.4	9.6	10.4	10.3	8.9	7.6	7.1	6.7	6.0	7.0
8	7.0	7.7	8.9	9.2	10.2	10.4	9.2	7.9	6.9	5.7	5.0	6.2
9	6.4	7.0	8.1	8.7	9.0	10.5	9.3	8.0	6.7	5.4	4.9	6.1
10	6.4	6.7	7.4	6.8	9.3	10.2	9.0	7.9	6.7	5.8	5.1	6.2
11	6.5	6.8	7.3	7.9	8.8	9.8	9.1	8.0	7.0	6.0	5.2	6.2
12 (midnight)	6.6	6.9	7.5	7.6	8.5	9.3	8.4	7.8	7.2	6.0	5.5	6.2
Average	6.3	7.8	7.7	9.2	8.0	9.0	8.3	8.9	7.5	7.2	6.6	6.8

Number of Days with Precipitation, from July 1, 1877, to December 31, 1900.

Month.	Less than 0.01 inch.	0.01 to 0.10 inch.	0.11 to 0.25 inch.	0.26 to 0.50 inch.	0.51 to 1 inch.	Over 1 inch.
January	39	78	43	34	37	25
February	33	62	35	30	30	17
March	47	90	46	40	30	11
April	41	59	32	30	20	6
May	38	86	22	17	10	8
June	22	18	4	4	1	0
July	16	1	0	0	0	0
August	13	2	1	0	0	0
September	19	12	12	8	3	0
October	27	34	20	18	7	8
November	23	47	27	28	19	11
December	35	82	51	36	48	19
Total	373	521	293	245	205	100

Number of Clear, Partly Cloudy, Cloudy, Rainy, and Foggy Days, and Total Number of Thunderstorms and Auroras from July 1, 1877, to December 31, 1900.

Month	Clear.	Partly cloudy.	Cloudy.	Rainy days, 0.01 or more.	Foggy days.	Total number thunderstorms.	Total number auroras.	Month.	Clear.	Partly cloudy.	Cloudy.	Rainy days, 0.01 or more.	Foggy days.	Total number thunderstorms.	Total number auroras.
January	260	195	247	217	131	2	0	September	599	88	33	35	1	12	0
February	275	219	156	176	43	3	0	October	514	186	64	80	15	3	0
March	311	218	184	116	14	9	0	November	419	160	141	134	53	3	0
April	348	228	114	147	3	10	0	December	253	215	276	223	153	2	0
May	441	182	90	88	0	16	0	Sums	5,340	1,895	1,359	1,246	414	74	(a)
June	548	107	35	26	1	6	0	Annual average	229	80	56	53	18	3	.....
July	698	40	6	1	0	3	0								
August	674	57	13	3	0	5	0								

(a) Two in November, 1882.

NUMBER OF HIGH WINDS FROM JULY 1, 1877, TO DECEMBER 31, 1900.

Month.	Velocity.			Month.	Velocity.			Month.	Velocity.		
	25 to 30 miles.	31 to 40 miles.	Over 40 miles.		25 to 30 miles.	31 to 40 miles.	Over 40 miles.		25 to 30 miles.	31 to 40 miles.	Over 40 miles.
January	6	11	7	June	10	5	1	November	8	8	4
February	5	15	1	July	6	0	0	December	12	11	5
March	8	9	5	August	3	0	0	Total	96	94	27
April	8	14	1	September	8	4	0				
May	11	9	2	October	11	8	1				

HIGHEST WIND VELOCITY, DIRECTION, AND DATE FROM JULY 1, 1877, TO APRIL 30, 1901.

	Velocity.	Direction.	Day and year.		Velocity.	Direction.	Day and year.
January	60	SE.	3, 1901	July	30	NW.	1, 1892
February	48	NW.	10, 1894	August	28	SW.	[b] 5, 1896
March	48	SE.	[a] 29, 1892	September	36	NW.	[c] 23, 1889
April	40	NW.	8, 1900	October	48	S.	20, 1894
May	44	NW.	9, 1895	November	51	SE.	21, 1900
June	42	NW.	12, 1886	December	60	SE.	9, 1894

[a] Also on March 4, 1888, from the SE., and March 2, 1896, from the S.
[b] Also on August 20, 1899, from the SW.
[c] Also on September 21, 1895, from the NW., and September 20, 1900, from the NW.

GREATEST PRECIPITATION IN THE SHORTEST PERIODS OF TIME FROM JULY, 1877, TO APRIL, 1901.

Date.	Duration.	Inches.	Average inch per hour.	Date.	Duration.	Inches.	Average inch per hour.
	h. m.				*h. m.*		
January 15, 1878	14 20	1.63	0.11	April 21, 1880	22 00	7.24	0.33
January 22, 1878	2 08	1.54	0.72	April 24, 1896	12 00	1.60	0.13
January 29, 1881	8 00	1.29	0.16	April 29, 1901	12 00	1.45	0.12
	24 00	2.66	0.11	May 5, 1889	12 00	1.14	0.10
January 23, 1886	8 00	1.77	0.22	May 5, 1900	11 00	1.32	0.12
	15 40	2.58	0.17	October 3, 1882	8 00	1.10	0.14
January 3, 1888	8 00	1.40	0.18		16 30	1.82	0.11
	12 30	1.86	0.15	October 21, 1899	12 00	1.48	0.12
January 15, 1894	12 00	1.52	0.13		23 15	2.08	0.09
	21 45	2.25	0.10	November 17, 1885	4 30	1.67	0.37
January 4, 1895	10 20	1.26	0.12		6 30	1.35	0.21
	24 00	2.66	0.11		7 00	1.27	0.18
January 20, 1896	12 00	1.44	0.12		18 00	4.29	0.24
	18 25	1.84	0.10	November 16, 1888	12 00	1.65	0.14
February 5, 1887	16 00	1.85	0.12		24 00	1.95	0.08
	32 00	3.46	0.11	November 30, 1892	7 45	2.26	0.29
February 23, 1891	7 40	1.20	0.16	November 21, 1900	12 00	1.60	0.13
February 19, 1894	9 00	1.83	0.20		21 00	2.32	0.11
	16 30	2.16	0.13	December 2, 1880	8 00	1.21	0.15
February 5, 1901	11 45	1.42	0.12		24 00	2.58	0.11
March 5, 1879	8 00	1.00	0.13	December 4, 1881	8 00	1.16	0.15
March 9, 1884	8 00	2.14	0.27	December 23, 1884	8 00	1.31	0.16
March 13, 1889	12 00	2.21	0.18	December 25, 1884	6 00	1.87	0.31
March 15, 1899	11 30	1.70	0.15	December 21, 1885	11 00	2.81	0.26
April 20, 1880	2 00	1.99	1.00	December 24, 1885	6 00	1.40	0.23
	8 00	4.15	0.52		9 00	1.85	0.21
	8 00	2.20	0.28	December 3, 1890	13 00	2.00	0.15
	16 00	6.35	0.40				

FRESNO.

By Mr. J. P. Bolton, Observer, Weather Bureau.

Fresno, Cal., in latitude 36° 43′ North, longitude 119° 49′ West, is situated in the fertile San Joaquin Valley, nearly midway between the Sierra Nevada and Coast Range mountains. Its climate in a general sense may be divided into two seasons, a wet season and a dry season.

During the period from October to May, comprising the wet season, Fresno County is favored with well-distributed rains at irregular intervals, aggregating for the season an average of about 10.12 inches. The greatest number of consecutive days with rain was eight, in January, 1895, the greatest amount recorded in any twenty-four consecutive hours being 2.10 inches—December 29 to 30, 1891.

The annual precipitation of the Sierra Nevada Mountains is much greater than that of the valley; precipitation in those high altitudes occurs mostly in the form of snow which is preserved by the cold of elevation in sufficient quantities to furnish abundance of water to our rivers, creeks, and canals during the dry season. The run-off, or amount of water which may be made available for the purposes of agriculture through this process of conservation, is estimated to be about 45 per cent of the total annual precipitation on the west side of the crest of the range.

A dry season prevails over this section during the period from May to September.

The highest temperature ever recorded at Fresno was 114°, on July 1, 1891; the lowest was 20° above zero, on January 17, 1888.

Mean Monthly and Annual Temperature (Degrees Fahrenheit).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1888	44.1	53.2	54.1	67.1	68.6	74.1	80.6	86.3	83.4	68.9	56.0	48.6	65.4
1889	43.6	50.5	58.4	63.5	69.6	79.5	82.6	82.2	75.6	62.8	54.1	49.1	64.3
1890	42.3	41.2	54.6	61.2	69.4	73.4	82.5	80.8	74.6	64.5	56.9	43.8	62.6
1891	45.4	46.5	54.4	59.0	67.1	78.0	83.6	83.6	74.6	67.0	56.2	43.9	63.0
1892	48.5	53.2	56.6	57.6	67.2	72.8	79.4	81.4	73.6	63.9	56.4	47.4	63.1
1893	42.8	48.4	52.2	55.9	66.9	73.2	80.8	82.0	68.4	60.8	52.8	48.4	61.0
1894	43.8	46.8	53.0	62.2	67.6	68.9	82.7	82.1	74.0	64.0	58.6	47.6	62.6
1895	45 3	52.6	53.7	60.0	67.4	77.2	79.4	80.6	70.4	66.6	52.8	43.6	62.5
1896	50.6	53.4	56.3	54.7	63.9	78.6	85.0	79.8	72.6	66.7	53.2	49.5	63.7
1897	43.7	49.2	48.6	63.5	71.7	74.3	82.8	81.8	72.8	61.2	52.0	45.1	62.3
1898	41.7	53.8	52.8	65.4	65.2	72.2	83.9	81.6	72.8	64.6	52.5	45.2	63.1
1899	50.0	51.2	54.4	61.1	63.2	78.3	81.8	75.1	77.3	60.4	54.4	43.8	62.6
1900	46.7	51.4	59.2	58.3	68.4	77.3	82.4	75.2	69.5	62.6	57.5	45.2	62.6
Means	45.3	50.2	54.4	60.8	67.4	74.1	82.1	81.0	73.8	64.2	54.6	47.0	63.0

Summaries of Monthly Means and Extremes of Temperature.

Month.	Highest monthly mean.		Lowest monthly mean.		Absolute maximum.		Absolute minimum.		Month.	Highest monthly mean.		Lowest monthly mean.		Absolute maximum.		Absolute minimum.	
	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.		Temperature.	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.
	°		°		°		°			°		°		°		°	
January	50.6	1896	41.7	1898	69.0	15, 1893	20.0	1, 1888	August	86.3	1888	75.1	1889	113.0	11, 1898	51.0	27, 1895
February	53.8	1898	47.2	1890	80.0	20, 1896	24.0	6, 1899	September	83.4	1888	68.4	1893	111.0	24, 1888	44.0	22, 1896
March	58.4	1889	48.6	1897	86.0	6, 1899	28.0	1, 1888	October	68.9	1888	60.4	1899	98.0	4, 1889	36.0	17, 1892
April	67.1	1888	54.7	1896	101.0	25, 1898	34.0	5, 1895	November	58.6	1894	52.0	1897	82.0	7, 1894	27.0	25, 1898
May	71.7	1897	63.2	1899	104.0	21, 1892	38.0	1, 1899	December	49.5	1896	43.6	1895	71.0	5, 1895	23.0	21, 1897
June	79.5	1889	68.9	1894	112.0	30, 1891	46.0	2, 1899	Annual.	86.3		41.7		114.0		20.0	
July	85.0	1896	79.4	{1892 / 1895}	114.0	1, 1891	51.0	8, 1891									

DATES OF FROST.

Year.	Last light frost.	Last killing frost.	First light frost.	First killing frost.	Year.	Last light frost.	Last killing frost.	First light frost.	First killing frost.
1888	Mar. 6	Mar. 1	Nov. 7	.....	1895	Mar. 21	Apr. 5	Nov. 22	Nov. 23
1889	Feb. 20	Feb. 19	Nov. 6	Dec. 21	1896	Apr. 15	Mar. 1	Nov. 26	Nov. 29
1890	Mar. 27	Apr. 14	Nov. 9	Dec. 6	1897	Mar. 23	Mar. 30	Nov. 16	Nov. 26
1891	Apr. 8	Mar. 29	Oct. 2	Dec. 3	1898	Mar. 27	Mar. 22	Nov. 7	Nov. 21
1892	Apr. 18	Mar. 28	Nov. 15	Nov. 25	1899	Apr. 29	Feb. 7	Dec. 10	.....
1893	Apr. 13	Mar. 13	Nov. 16	Nov. 18	1900	Apr. 9	Feb. 8	Oct. 30	Dec. 28
1894	Apr. 17	Mar. 4	Dec. 14	Dec. 2					

MONTHLY, ANNUAL AND SEASONAL PRECIPITATION (INCHES AND HUNDREDTHS).

[An accurate record of rainfall was kept by Louis Enstein from August, 1881, to August, 1887; measurements were made with a standard rain gauge. Weather Bureau records began in August, 1887.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.	Seasonal.	
1882	0.54	1.44	1.80	1.36	0.21	0.00	0.00	0.00	0.56	1.07	1.00	0.42	7.89	1881–82	6.91
1883	0.54	0.27	3.28	1.01	1.69	0.00	0.00	0.00	0.05	1.17	0.17	0.56	8.69	1882–83	9.33
1884	2.54	4.35	3.77	3.42	1.43	1.25	0.00	0.00	0.00	0.46	0.08	3.93	21.23	1883–84	18.90
1885	0.63	0.00	0.76	1.32	0.02	T.	0.00	0.00	0.00	0.11	9.54	2.06	14.44	1884–85	7.20
1886	2.82	0.68	1.34	2.87	0.03	0.00	0.00	0.00	0.00	0.57	0.80	0.44	9.55	1885–86	19.45
1887	0.40	3.09	0.17	2.93	0.03	0.04	0.00	0.00	0.49	0.15	0.32	1.16	8.78	1886–87	8.47
1888	1.75	0.13	1.95	0.22	0.56	T.	T.	T.	0.06	0.00	2.38	1.71	8.76	1887–88	6.73
1889	0.34	0.32	2.07	0.54	0.57	0.00	0.00	T.	0.00	3.17	1.39	3.87	12.27	1888–89	7.99
1890	2.12	0.80	1.04	0.17	0.45	0.00	0.00	T.	1.26	0.00	0.22	2.30	8.36	1889–90	13.01
1891	0.88	2.24	0.81	0.49	0.03	0.02	0.00	0.00	0.27	0.00	0.21	3.99	8.94	1890–91	8.25
1892	0.48	1.00	1.69	0.79	1.44	0.06	0.00	0.00	T.	0.34	0.39	2.56	8.75	1891–92	9.93
1893	1.04	2.21	4.22	0.34	T.	0.00	T.	0.00	0.01	0.02	0.16	1.40	9.40	1892–93	11.10
1894	2.27	2.02	0.29	0.10	1.16	1.16	T.	T.	0.75	0.37	0.27	4.09	12.48	1893–94	8.59
1895	4.14	1.70	1.84	0.99	0.52	0.00	T.	T.	0.07	0.16	0.19	0.78	10.39	1894–95	14.67
1896	2.89	0.06	1.21	2.82	0.02	0.00	0.07	0.15	0.06	1.28	1.46	1.00	11.02	1895–96	8.42
1897	1.93	2.65	1.64	0.30	0.00	T.	0.00	T.	T.	1.19	0.22	0.48	8.41	1896–97	10.32
1898	0.42	1.15	0.71	0.00	0.79	0.00	0.00	0.00	1.12	0.03	0.34	0.43	4.99	1897–98	4.94
1899	1.92	0.02	2.90	0.36	0.06	0.66	0.00	0.00	0.00	2.01	1.52	1.09	10.54	1898–99	7.98
1900	1.52	0.08	0.88	1.21	1.97	T.	T.	0.00	0.16	0.33	4.61	0.33	11.09	1899–00	10.28
Average	1.54	1.27	1.70	1.12	0.58	0.17	T.	0.01	0.26	0.65	1.33	1.72	10.31	.....	10.13

GREATEST PRECIPITATION (INCHES AND HUNDREDTHS) IN TWENTY-FOUR HOURS.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Greatest annual.
1888	0.95	0.13	1.05	0.20	0.31	T.	T.	T.	0.06	0.00	1.33	0.71	1.33
1889	0.29	0.53	0.55	0.32	0.33	0.00	0.00	T.	0.00	1.73	0.48	0.75	1.73
1890	0.74	0.30	0.33	0.15	0.43	0.00	0.00	T.	1.12	0.00	0.22	1.21	1.21
1891	0.54	0.50	0.26	0.29	0.02	0.02	0.00	0.00	0.27	0.00	0.21	2.10	2.10
1892	0.24	0.38	0.53	0.43	0.82	0.06	0.00	0.00	T.	0.32	0.22	0.66	0.82
1893	0.39	1.48	1.22	0.32	T.	0.00	T.	0.00	0.01	0.02	0.15	0.55	1.48
1894	1.28	0.62	0.20	0.07	0.94	0.74	T.	T.	0.75	0.28	0.27	1.12	1.28
1895	1.46	0.95	0.52	0.84	0.52	0.00	T.	T.	0.06	0.13	0.12	0.40	1.46
1896	1.05	0.06	0.50	1.68	0.02	0.00	0.06	0.15	0.06	1.28	1.01	0.56	1.68
1897	0.73	1.16	0.50	0.30	0.00	T.	0.00	T.	T.	0.48	0.13	0.25	1.16
1898	0.17	0.49	0.30	0.00	0.74	0.00	0.00	0.00	1.12	0.03	0.34	0.32	1.12
1899	0.84	0.02	0.99	0.31	0.06	0.60	0.00	0.00	0.00	0.85	0.72	0.36	0.99
Greatest	1.46	1.48	1.22	1.68	0.94	0.74	0.06	0.15	1.12	1.73	1.33	2.10	2.10
Date	4–5	8–9	20	24–25	14–15	5	25	30	29	22–23	16	29–30	Dec.
Year	1895	1893	1893	1896	1894	1894	1896	1896	[a]1890	1889	1888	1891	1891

[a] Also September 25–26, 1898.

MONTHLY EXTREMES OF PRECIPITATION (INCHES AND HUNDREDTHS).

Month.	Greatest monthly precipitation.		Least monthly precipitation.		Times exceeding normal.	Month.	Greatest monthly precipitation.		Least monthly precipitation.		Times exceeding normal.
	Amount.	Date.	Amount.	Date.			Amount.	Date.	Amount.	Date.	
January	4.14	1895	0.34	1889	7	July	0.07	1896	0.00	(a)	5
February	4.35	1884	0.00	1885	6	August	0.15	1896	0.00	(a)	7
March	4.22	1893	0.17	1887	7	September	1.26	1890	0.00	(a)	4
April	3.42	1884	0.00	1898	1	October	3.17	1889	0.00	1890	4
May	1.69	1883	0.00	1897	7	November	9.54	1885	0.08	1884	4
June	1.16	1894	0.00	(a)	2	December	4.09	1894	0.42	1882	6

WEATHER.

Month.	Average number of—				Month.	Average number of—			
	Clear days.	Partly cloudy days.	Cloudy days.	Rainy days.		Clear days.	Partly cloudy days.	Cloudy days.	Rainy days.
January	9	8	14	8	August	25	6	0	0
February	15	7	6	6	September	25	3	2	1
March	13	10	8	8	October	20	7	4	8
April	19	8	3	3	November	17	7	6	4
May	21	7	3	3	December	9	9	13	9
June	26	3	1	1	Annual	228	77	60	46
July	29	2	0	0					

FOGGY DAYS AND DAYS WITH THUNDERSTORMS IN TWELVE YEARS.

Month.	Foggy days.		Total thunderstorms.	Month.	Foggy days.		Total thunderstorms.
	Number.	Average.			Number.	Average.	
January	144	12	1	July	0	0	1
February	44	4	3	August	1	0	2
March	25	2	6	September	4	0	12
April	3	0	1	October	15	1	5
May	0	0	3	November	75	6	1
June	0	0	0	December	160	13	0

HIGHEST WIND VELOCITY (MILES PER HOUR) AND DIRECTION FOR TWELVE YEARS.

Month.	Year.	Velocity.	Direction.	Month.	Year.	Velocity.	Direction.
		Miles.				*Miles.*	
January	1898	32	NW.	July	1893	24	NW.
February	1894	30	NW.	August	1891	24	NW.
March	1896	38	SE.	September	1899	28	NW.
April	1894	30	NW.	October	1892	25	NW.
May	1894	30	NW.	November	1892	30	SE.
June	1891	30	NW.	December	1891	24	NW.

AVERAGE MONTHLY RELATIVE HUMIDITY (PER CENT) FOR TWELVE YEARS.

Month.	Per cent.	Month.	Per cent.
January	79	July	33
February	70	August	34
March	68	September	42
April	58	October	56
May	51	November	65
June	41	December	82

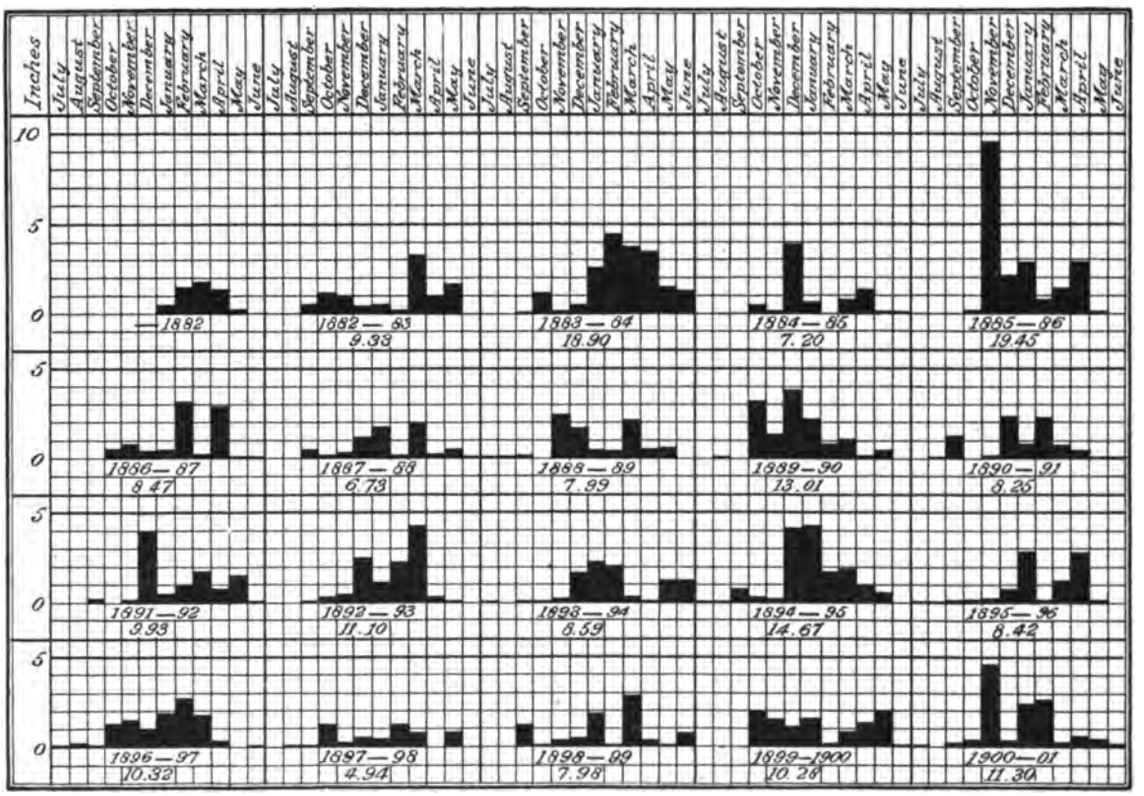

FIG. 12.—Seasonal rainfall at Fresno, Cal., from 1882 to 1901.

Sunshine for the Years 1898, 1899, and 1900.

[N. lat. 36° 43′.]

	Percentage of sunshine recorded during hours ending (local time)—																Total (hours).	Percentage of possible.
	5h a. m.	6h	7h	8h	9h	10h	11h	Noon.	1h	2h	3h	4h	5h	6h	7h	8h		
1898.																		
January	.....	.....	.....	56	55	63	70	75	82	79	77	65	51	83	.....	.....	197.6	68
February	.....	.....	71	44	59	71	76	76	83	85	82	69	40	47	.....	.....	198.7	68
March	.....	33	38	41	55	61	62	66	68	71	68	66	45	43	46	.....	212.2	57
April	59	49	53	50	61	68	67	65	63	65	60	53	38	37	40	0	223.2	55
May	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
June	50	50	47	50	63	73	70	72	80	74	73	61	54	52	54	57	285.4	62
July	58	55	55	61	69	69	70	75	75	71	68	52	44	41	51	48	283.0	60
August	67	73	74	70	75	78	78	75	76	79	70	64	55	69	71	56	311.2	72
September	.....	64	66	68	66	77	79	83	80	78	70	66	61	56	48	.....	264.2	70
October	.....	100	41	46	53	58	55	56	58	58	54	50	44	36	.....	.....	177.2	52
November	.....	.....	67	60	60	67	77	80	81	70	57	49	46	.....	.....	.....	190.6	66
December	.....	.....	.....	49	45	58	71	74	77	73	67	54	50	.....	.....	.....	175.2	63
Sum	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Percentage of possible	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1899.																		
January [a]	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
February	.....	.....	84	82	97	98	100	100	100	100	100	95	84	70	.....	.....	284.5	94
March	.....	27	30	43	54	59	72	73	68	74	75	67	55	37	17	.....	219.9	59
April	.....	83	80	82	87	96	95	98	96	87	87	86	81	60	48	.....	333.1	84
May	61	69	85	95	99	98	97	97	97	97	98	97	95	91	88	70	405.0	92
June	84	83	85	90	93	95	99	100	99	97	96	94	90	90	87	88	406.7	92
July	81	91	97	100	100	100	100	100	100	100	100	100	99	97	91	88	438.0	98
August	.....	82	87	93	96	95	96	95	95	94	94	95	93	88	84	60	387.3	92
September	.....	93	83	89	97	99	98	100	100	100	98	98	89	85	100	.....	353.4	95
October	.....	100	40	49	64	69	77	75	81	77	75	65	47	34	.....	.....	225.9	65
November	.....	.....	0	11	31	38	49	53	57	61	56	44	25	0	.....	.....	126.8	41
December	.....	.....	0	1	11	13	14	19	23	20	23	18	10	.....	.....	.....	46.0	15
Sum	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Percentage of possible	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1900.																		
January	.....	.....	.....	6	7	8	13	15	17	22	25	22	17	6	.....	.....	46.6	15
February	.....	.....	72	65	77	81	80	81	86	82	81	83	74	62	.....	.....	236.6	78
March	.....	82	55	54	68	86	91	93	98	96	97	92	83	64	78	.....	303.7	82
April	.....	52	62	71	76	82	82	82	84	83	84	78	71	65	60	.....	295.6	75
May	78	58	61	75	80	86	91	89	92	86	78	79	79	67	59	70	337.9	77
June	83	83	86	89	91	96	99	100	97	98	95	95	91	80	74	74	398.9	91
July	95	93	94	95	96	94	97	97	94	97	96	97	96	94	91	90	424.7	95
August	.....	89	87	90	92	97	98	99	99	100	99	97	95	90	87	100	396.7	94
September	.....	75	77	88	95	96	99	98	97	100	97	92	85	74	67	.....	338.6	91
October	.....	50	59	66	74	75	81	84	89	93	84	80	65	58	.....	.....	267.6	77
November	.....	.....	30	20	27	41	48	50	53	50	44	37	29	100	.....	.....	121.9	40
December	.....	.....	.....	3	3	3	3	4	15	21	15	12	11	.....	.....	.....	26.9	9
Sum	256	582	683	722	786	845	882	892	921	928	895	864	796	760	516	334	3,195.7	824
Percentage of possible	.....	.....	.....	60	66	70	74	74	77	77	75	72	72	.....	.....	.....	266.3	69

[a] No record.

CLIMATE OF SANTA CLARA VALLEY.

The Santa Clara Valley lies between the Santa Cruz Mountains on the west and the foothills of the Coast Range on the east. In some respects it is an ideal valley in which to study the general movements of the air and the modifications of the same due to topography. We are fortunately able to discuss the principal climatic factors for the following stations: Menlo Park, San Mateo, San Jose, and the Lick Observatory at Mount Hamilton. Mount Tamalpais and San Francisco should be added to the list for a proper understanding of the air movement through the valley. As has been stated before, the prevailing westerly winds are strongly intensified at the Golden Gate, and the whole effect of the topography is to force the air down the valley. Some interesting relations showing the effect of topography upon rainfall become apparent. The mountain stations show a much larger rainfall. On Tamalpais the rainfall exceeds that of San Francisco in the ratio of 3 to 2, and at Mount Hamilton the rainfall exceeds that of San Jose in the ratio of 2 to 1. The gradual increase in rainfall even in so short a distance as 50 miles is also apparent. The mean annual rainfall at San Jose is 14.88 inches, at Menlo Park 16.43 inches, at San Mateo 20.71 inches, and at San Francisco 23 inches. In other words, within a distance of 50 miles, from San Jose to San Francisco, we find an increase of nearly 8 inches in rainfall, and this increase is nearly in proportion to the distance from San Francisco.

The following comparative data for the six stations for a period of three years serve excellently to show the general features of the climate of the Santa Clara Valley:

MEAN MONTHLY AND ANNUAL TEMPERATURE (DEGREES FAHRENHEIT).

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
1898.													
Mount Tamalpais	40.8	46.4	46.6	56.0	50.5	61.9	70.0	67.5	62.6	59.4	51.2	45.7	54.9
San Francisco	46.7	52.6	51.2	54.5	52.6	59.0	56.0	58.0	59.0	61.2	55.4	49.7	54.7
Lick Observatory	35.7	42.8	39.1	50.8	47.9	62.0	71.4	70.5	61.8	56.0	46.5	43.3	52.3
San Jose	45.4	53.3	51.8	57.7	57.0	65.3	65.1	65.2	63.1	61.1	55.0	46.3	57.2
Menlo Park	44.9	52.6	49.9	59.1	58.7	66.7	69.0	66.6	65.1	60.5	52.4	46.0	57.6
San Mateo	45.9	52.6	54.7	61.3	61.5	70.2	67.8	71.8	64.9	62.8	54.3	47.6	59.6
1899.													
Mount Tamalpais	47.8	47.6	44.6	51.6	51.2	66.8	71.0	61.4	73.2	55.3	49.4	47.7	55.6
San Francisco	53.0	51.6	52.2	54.6	52.6	56.9	55.9	58.3	58.2	59.3	56.8	49.6	54.9
Lick Observatory	42.5	41.0	39.6	47.6	46.3	63.7	71.6	61.3	69.8	50.2	46.9	45.6	52.2
San Jose	56.4	52.2	54.7	59.1	58.4	67.8	67.4	65.5	66.0	60.4	57.6	50.4	59.7
Menlo Park	47.8	50.0	53.5	57.4	58.4	66.0	65.9	65.8	63.3	59.2	56.0	48.6	57.7
San Mateo	51.6	49.0	52.8	56.4	58.0	68.3	67.7	67.4	64.9	61.0	58.8	49.3	58.8
1900.													
Mount Tamalpais	47.4	48.4	52.2	48.6	55.4	62.2	69.8	64.0	60.4	55.2	58.6	48.8	55.5
San Francisco	50.7	53.6	55.2	54.0	57.0	57.6	58.2	59.7	63.3	58.9	56.3	50.2	56.2
Lick Observatory	47.5	43.0	48.1	43.0	52.9	63.8	71.6	62.1	56.3	51.6	51.1	47.2	53.2
San Jose	51.3	53.5	56.4	58.8	64.8	67.8	69.8	70.0	68.4	63.4	58.2	50.6	61.1
Menlo Park	51.4	52.6	57.6	55.9	62.4	66.5	67.3	67.3	65.6	59.4	57.4	50.2	59.5
San Mateo	52.2	52.0	58.3	59.2	65.8	66.9	70.0	67.7	66.1	60.7	59.4	48.6	60.6

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1898.													
Mount Tamalpais	.....	6.69	0.73	0.60	4.84	1.05	0.00	0.00	0.80	1.48	1.35	1.42	.....
San Francisco	1.12	2.13	0.24	0.19	1.44	0.19	0.00	T.	1.06	0.86	0.46	1.62	9.31
Lick Observatory	2.30	4.16	2.04	0.84	2.41	0.38	0.00	0.00	0.29	1.33	1.23	2.13	17.11
San Jose	0.98	1.93	0.52	0.20	0.44	0.06	0.00	0.00	1.13	0.61	0.45	0.44	6.71
San Mateo	1.46	3.04	0.64	0.25	0.94	0.19	0.00	0.00	1.57	0.81	0.55	1.35	10.80
Menlo Park	1.38	2.24	0.58	0.15	0.63	0.00	0.00	0.00	2.00	0.73	0.31	0.99	9.01
1899.													
Mount Tamalpais	5.92	0.28	10.38	1.89	1.70	0.29	0.00	0.01	0.00	4.26	7.48	4.65	36.86
San Francisco	3.67	0.10	7.61	0.62	0.86	0.01	0.00	T.	0.00	3.92	3.79	2.65	23.23
Lick Observatory	5.63	0.75	11.11	1.40	1.47	0.39	0.00	0.12	T.	6.37	4.82	4.16	36.32
San Jose	1.88	0.21	4.17	0.48	0.65	T.	0.00	0.00	0.00	3.26	2.79	1.43	14.78
San Mateo	4.21	0.37	9.02	1.02	0.67	0.71	0.00	0.02	0.00	3.89	4.70	2.57	27.18
Menlo Park	3.62	0.42	6.67	0.34	0.70	0.05	0.00	0.05	0.00	3.08	3.22	1.87	19.89
1900.													
Mount Tamalpais	6.04	1.91	2.91	2.52	0.58	0.31	0.00	0.00	1.10	3.44	4.31	2.82	25.94
San Francisco	4.11	0.64	1.91	1.08	0.32	0.05	T.	T.	0.46	1.48	3.91	1.37	15.33
Lick Observatory	3.26	1.70	3.37	4.06	1.35	T.	0.01	0.02	0.08	3.48	7.76	2.21	27.50
San Jose	2.05	0.44	1.36	1.66	0.96	0.01	0.02	0.00	0.17	0.62	4.36	1.32	12.97
San Mateo	5.55	0.84	2.19	1.23	0.55	0.00	0.00	0.00	0.50	1.64	5.39	2.31	20.20
Menlo Park	3.69	0.52	1.46	1.00	0.66	0.05	0.00	0.00	0.00	2.00	4.61	1.99	15.98

The mean annual temperature for three years at Mount Tamalpais is 55.3°, and for San Francisco for the same period is 55.3°, which is practically the temperature of the Pacific Ocean near the Golden Gate. The mean annual temperature for San Jose for a period of twenty-six years is 58°, and for San Francisco 56°. The mean annual temperature on Mount Hamilton is 52°. At both of the mountain stations there is a well-marked seasonal curve of temperature. Comparing the mean annual temperatures it would appear that from sea level to 1,000 meters elevation the fall in temperature is 1.5° C. In January the mean temperatures are, from sea level up, 10.1°, 7.4°, and 5.5° C., or there is a vertical gradient of 1° fall for 260 meters. But in July this gradient is inverted, and the temperatures run from sea level upward as follows: 13.7°, 21.3°, and 22° C., or at the rate of 1° rise for 44 meters. These temperature inversions are due to the water vapor carried by the winds through the Gate from the Pacific and down the valleys. Under normal conditions ascending air cools at the rate of 1°C. for 100 meters of ascent. But our experiments at Mount Tamalpais show that often the temperature contrasts are more marked than the general averages quoted above would indicate. Sea-level temperatures (12° or 13° C.) and fog often prevail to the 500-meter level, while at 700 meters clear weather with temperatures of 25° or 26° C. prevail. For example, on July 15, 1900, at 5 p. m., the temperature at San Francisco was 11° C. (52° F.), at Point Reyes 13° C. (55° F.), and at Mount Tamalpais 27° C. (80° F.). It is also interesting to note that the temperatures at Red Bluff, Sacramento, and Fresno were respectively 39° C. (102° F.), 33° C. (92° F.), and 38° C. (100° F.). The mean of three temperature values at different points in fog gave a temperature of 10° C. or 50° F. as the temperature of condensation or the dew-point. The maximum weight of the water vapor per cubic foot at this temperature is 4.076 grains.

MENLO PARK.

Menlo Park is situated about 25 miles in an air line south of San Francisco, in latitude 37° 27′ north, longitude 122° 11′ west. To the east lies the southern portion of San Francisco Bay, about 4 miles wide. The average elevation is between 50 and 60 feet. About 3 miles to the west the land rises, varying in elevation from 100 to 500 feet. To the southwest, at a distance of about 8 miles, the Montara Mountains attain heights of from 1,000 to 2,000 feet.

The mean annual temperature, based upon records covering a period of twenty-three years, is 57.7°, which is practically the same temperature as that of San Jose and about 2° warmer than that of San Francisco. The coldest month is January, with a mean temperature of 47.3°, and the warmest is July, with a mean temperature of 67.7°. The highest temperature recorded is 106°, in June, 1891, and the lowest 20°, in December, 1879, and January, 1888. Reliable frost data are not available.

The mean annual rainfall, based upon records covering twenty-three years, is 16.43 inches, or nearly 2 inches more than at San Jose and 7 inches less than at San Francisco. With the single exception of a heavy rainfall in 1886, no rain has fallen in July. December is the month of heaviest rainfall, and more than half of the annual rainfall occurs in the months of December, January, February, and March. During the past twenty-three years there have been but two years when the rainfall did not exceed 10 inches. In 1878 and 1898 the annual rainfall was but slightly above 9 inches. There have been five years when the annual rainfall exceeded 20 inches. In 1889 the total rainfall for the year was 26.90 inches.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	46.3	49.3	55.4	59.2	64.9	67.6	67.0	64.2	61.9	58.2	51.6	45.8	57.6
1879	44.8	52.5	55.0	59.9	62.5	71.9	67.6	69.2	65.0	59.1	50.5	45.8	58.6
1880	44.1	44.7	48.9	55.3	64.2	66.1	67.0	66.3	63.8	57.8	49.3	50.3	56.5
1881	49.3	53.1	53.9	61.0	64.2	67.3	69.7	66.8	63.2	56.0	50.3	49.0	58.6
1882	46.6	15.4	52.1	55.7	65.5	66.6	69.0	67.7	63.3	58.8	50.7	49.4	57.6
1883	43.4	45.8	54.1	55.1	62.6	67.5	65.4	64.4	65.9	55.8	49.8	46.5	56.4
1884	46.4	48.1	53.2	57.2	65.6	65.3	69.3	66.0	59.6	56.5	53.3	48.3	57.4
1885	47.8	51.6	55.3	58.5	62.4	63.4	68.0	66.3	64.4	58.6	54.2	49.2	58.3
1886	47.8	52.3	50.1	54.9	61.7	65.5	66.5	65.4	61.1	55.5	48.7	50.5	56.7
1887	46.4	47.1	55.8	55.4	61.0	66.5	64.2	63.6	64.6	60.8	53.6	48.3	57.3
1888	45.8	52.5	51.4	59.0	60.4	67.0	70.2	69.5	66.7	61.7	55.2	53.1	59.4
1889	47.5	51.2	56.3	59.1	61.9	66.4	66.0	67.9	66.3	61.3	55.8	50.3	59.2
1890	45.4	47.8	53.7	57.0	62.8	63.7	66.9	66.3	64.9	58.9	54.6	48.6	57.6
1891	48.7	51.4	55.4	56.1	61.1	67.3	67.6	68.2	64.8	60.9	56.1	48.3	58.8
1892	50.3	52.9	56.5	55.3	64.8	66.5	67.9	68.0	65.4	59.6	54.6	51.4	59.4
1893	47.5	49.1	51.5	52.8	57.2	63.1	66.2	66.9	61.1	58.1	54.4	50.9	56.6
1894	47.0	47.7	49.9	58.6	59.7	63.1	67.8	67.3	66.4	61.2	55.5	49.0	57.8
1895	47.5	52.3	53.0	56.6	60.4	66.6	64.8	66.8	63.8	61.9	55.0	48.2	58.1
1896	52.7	54.7	55.5	54.8	60.5	67.5	71.6	67.5	64.4	60.5	52.1	51.5	59.7
1897	47.5	50.4	50.4	60.0	65.0	68.0	68.6	65.5	64.3	60.2	51.9	48.0	50.3
1898	44.9	52.6	49.9	59.1	58.7	66.7	69.0	66.6	65.1	60.5	52.4	46.0	57.6
1899	47.8	50.0	53.5	57.4	58.4	66.0	65.9	65.8	63.3	59.2	56.0	48.6	57.7
1900	51.4	52.6	57.6	55.9	62.4	66.5	67.3	67.3	65.6	59.4	57.4	50.2	59.5
Mean (23 years)	47.3	50.2	53.4	57.1	62.1	66.3	67.7	66.7	64.1	59.2	53.2	49.0	57.7

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

1878	2.98	2.21	1.72	1.36	0.10	0.00	0.00	T.	0.00	0.00	0.42	0.25	9.04
1879	3.09	2.73	4.27	1.19	0.98	0.03	0.00	0.00	0.00	0.48	1.66	3.96	18.39
1880	1.92	1.79	1.65	6.44	0.69	0.00	0.00	0.00	0.00	0.00	0.59	8.93	22.01
1881	3.70	1.56	0.68	2.66	0.00	0.24	0.00	0.00	0.00	0.36	0.71	1.97	11.88
1882	0.65	1.17	3.71	0.67	0.18	0.00	0.00	0.00	0.23	1.25	1.69	0.52	10.07
1883	2.38	0.52	2.70	0.76	2.49	0.00	0.00	0.00	0.20	0.73	0.28	0.85	10.91
1884	3.35	4.07	4.80	3.40	0.00	3.16	0.00	0.05	0.04	1.86	0.27	4.92	25.92
1885	1.89	0.12	0.50	1.98	0.04	0.00	0.00	0.00	0.02	0.09	6.22	2.17	13.03
1886	4.97	0.37	1.65	3.34	0.08	0.00	0.24	0.00	0.00	0.86	0.40	1.26	13.17
1887	0.72	4.92	0.46	1.18	0.01	0.00	0.00	0.00	0.22	0.00	0.85	2.16	10.52
1888	3.17	1.36	2.31	0.02	0.37	0.09	0.00	0.00	0.98	0.00	3.72	2.59	14.61
1889	0.65	0.54	5.75	0.69	1.08	0.00	0.00	0.00	0.00	4.96	2.38	10.85	26.90
1890	7.45	3.27	2.76	0.51	1.48	0.00	0.00	0.00	0.18	0.00	0.00	2.61	18.26
1891	0.69	7.02	2.17	1.83	0.38	0.03	0.00	0.00	0.28	0.00	0.46	5.26	18.12
1892	1.07	1.39	2.91	0.47	1.43	0.00	0.00	0.00	0.00	1.14	4.69	6.55	19.65
1893	2.44	2.75	4.83	1.26	0.23	0.00	0.00	0.00	0.09	0.09	1.51	1.90	14.60
1894	4.60	2.80	0.57	0.00	0.99	0.01	0.00	0.00	1.65	1.51	0.46	9.65	22.24
1895	7.12	1.59	2.30	1.44	0.36	0.00	0.00	0.00	0.00	1.16	1.45	1.13	16.55
1896	6.76	0.00	2.15	3.65	0.45	0.00	0.00	0.85	0.53	1.13	4.67	3.14	23.33
1897	1.69	3.92	4.20	0.13	0.00	0.00	0.00	0.00	0.00	1.91	0.76	1.63	14.24
1898	1.38	2.24	0.58	0.15	0.63	0.00	0.00	0.00	2.00	0.73	0.31	0.99	9.01
1899	3.62	0.42	6.67	0.34	0.07	0.05	0.00	0.05	0.00	3.08	3.22	1.87	19.39
1900	3.69	0.52	1.46	1.00	0.66	0.05	0.00	0.00	0.00	2.00	4.61	1.99	15.98
Average (23 years)	3.04	2.06	2.62	1.50	0.55	0.16	0.01	0.04	0.28	1.01	1.80	3.35	16.43

Maximum Temperatures (Degrees Fahrenheit).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1878	.....	.....	78	79	90	98	86	82	92	85	70	72
1879	.....	70	82	82	90	94	90	98	91	82	70	66
1880	66	66	72	78	90	92	86	82	90	78	74	62
1881	66	72	82	82	88	86	90	84	90	76	70	66
1882	64	66	80	84	85	80	92	88	90	80	73	72
1883	64	74	78	74	92	90	96	96	99	80	72	66
1884	60	74	72	76	86	80	96	89	82	78	70	64
1885	64	72	74	82	92	81	94	96	95	88	70	66
1886	68	70	74	78	90	88	94	93	97	80	68	70
1887	74	65	81	84	102	103	87	86	94	89	75	60
1888	64	76	76	88	88	90	101	96	91	85	72	63
1889	64	69	81	81	86	85	96	88	96	88	75	62
1890	63	65	74	82	96	92	94	92	88	86	78	67
1891	68	62	74	80	88	106	95	104	88	87	71	62
1892	65	69	79	79	96	91	102	102	90	78	75	67
1893	65	68	80	74	86	96	88	84	80	82	72	71
1894	60	62	70	84	86	90	90	98	98	88	75	60
1895	68	67	70	82	90	94	90	90	92	84	78	68
1896	66	72	72	72	98	94	92	84	88	87	75	62
1897	57	68	68	85	94	95	94	86	92	78	70	66
1898	58	70	75	89	85	98	97	90	86	86	78	65
1899	80	78	80	84	90	95	92	92	92	96	69	64
1900	64	68	75	73	86	91	92	99	95	84	72	66
Absolute maximum and year	80	78	82	89	102	106	102	104	99	96	78	72
	1899	1899	a 1879	1898	1887	1891	1892	1891	1883	1899	a 1890	a 1878

a Also other years.

Minimum Temperatures (Degrees Fahrenheit).

1878	.....	.....	34	44	50	55	52	54	45	38	32	24
1879	.....	30	35	46	46	58	54	58	50	40	30	20
1880	26	28	30	42	48	50	56	52	52	44	28	32
1881	32	38	34	48	50	54	54	56	46	36	30	30
1882	26	24	32	40	52	55	58	54	45	36	30	32
1883	24	24	40	40	46	54	54	52	48	37	29	27
1884	28	24	36	45	54	56	56	53	44	40	35	24
1885	32	32	38	40	49	49	51	51	46	39	35	34
1886	28	37	34	37	46	50	52	50	42	38	31	32
1887	28	28	34	42	42	44	46	44	46	40	26	32
1888	20	34	36	42	50	56	52	54	50	40	33	38
1889	32	32	40	46	48	54	54	50	48	44	38	34
1890	28	30	36	40	47	52	53	52	47	41	36	32
1891	29	32	37	43	50	51	53	53	47	41	35	29
1892	36	32	38	40	46	51	52	50	48	42	38	33
1893	31	35	36	39	44	48	50	50	45	40	33	30
1894	30	33	33	40	43	48	52	40	49	42	38	33
1895	32	35	35	38	46	48	42	56	48	46	36	29
1896	31	36	34	40	50	52	55	54	50	44	30	36
1897	32	32	35	42	50	56	56	52	49	42	34	29
1898	27	36	32	40	32	50	52	52	50	44	34	28
1899	32	26	38	44	44	52	50	50	50	40	42	32
1900	36	36	38	38	50	52	52	54	50	40	40	36
Absolute minimum and year	20	24	30	37	32	44	42	40	42	36	26	20
	1888	a 1882	1880	1886	1898	1887	1895	1894	1886	a 1881	1887	1879

a Also other years.

SAN MATEO.

[Data from records of Southern Pacific Railway Company.]

San Mateo is situated in latitude 37° 34′ north, longitude 122° 19′ west, about 14 miles in an air line south and slightly east of San Francisco. By railroad the distance is about 22 miles. The elevation is about 22 feet above sea level. To the north and east, at a distance of about 1 mile, are the waters of San Francisco Bay, while to the west, stretching northwest to southeast, are the hills of the Buriburi ridge, with elevations varying from 200 to 600 feet.

The mean annual temperature, based upon records covering a period of twenty-seven years, from 1874 to 1900, inclusive, is 57.6°, which, it is interesting to notice, is almost that of Menlo Park, 57.7°, and practically the same as that of San Jose. The coldest month is January, with a mean temperature of 47.9°, and the warmest is July, 65.4°. It will be noticed that July is 2.3° cooler than at Menlo Park, and 1.3° cooler than at San Jose, but 6.6° warmer than at San Francisco. The highest temperature recorded is 100°, in May, 1887, and the lowest 25°, on several dates. Reliable frost data are not available.

The mean annual rainfall is 20.71 inches, or about 4 inches more than at Menlo Park. With the single exception of a rain in 1886, no rain has fallen during the month of July. The month of heaviest rainfall is January, and in this respect San Mateo differs from other points in the valley, December being the month of heaviest rainfall elsewhere. In the past twenty-seven years there has been but one year when the rainfall did not exceed 10 inches. In 1877 but 8 inches of rain fell. There have been fourteen years when the annual rainfall exceeded 20 inches. In 1894 over 34 inches fell. The greatest monthly precipitation amounted to 12.44 inches, during December, 1889.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1874	48.4	48.4	51.0	59.3	62.8	67.7	64.3	67.0	63.2	57.6	53.1	46.8	57.5
1875	47.0	48.4	53.2	57.1	61.8	61.2	59.7	58.2	57.4	57.3	55.3	50.0	55.6
1876	46.0	48.7	52.7	55.8	60.0	66.6	60.3	61.6	60.6	57.5	54.6	47.6	57.7
1877	48.7	53.6	55.5	55.5	56.4	66.4	63.8	61.2	62.8	58.0	52.6	50.0	57.0
1878	50.9	50.5	53.0	56.0	60.8	64.5	66.4	66.3	65.4	63.4	57.1	49.0	58.6
1879	48.3	53.9	58.2	60.8	60.8	68.6	65.6	68.0	64.1	61.1	51.8	46.0	58.9
1880	43.1	40.5	49.9	55.1	63.1	65.9	67.2	64.5	65.0	59.6	49.3	56.8	56.2
1881	50.8	51.7	50.8	56.5	59.2	60.5	62.0	60.0	58.8	51.6	46.5	45.6	54.5
1882	43.6	42.5	47.7	49.1	56.5	58.5	60.2	62.8	60.7	56.6	49.4	48.5	53.0
1883	43.2	44.9	52.3	52.9	57.6	64.5	62.1	60.9	64.3	54.9	49.1	46.1	54.4
1884	44.8	45.8	50.2	53.0	59.2	60.8	64.3	60.2	59.8	54.1	52.5	48.9	54.5
1885	47.6	51.0	53.5	56.6	60.2	61.2	68.1	65.2	66.4	61.3	57.9	53.6	58.6
1886	50.3	54.7	53.8	57.8	64.0	66.6	68.4	67.5	65.1	59.2	54.0	54.1	59.6
1887	50.3	47.0	55.1	57.2	60.6	64.9	63.6	63.6	64.3	64.4	51.2	50.1	57.7
1888	46.5	51.2	51.7	58.3	58.2	67.1	69.7	66.7	62.8	58.1	49.3	50.6	57.5
1889	45.5	49.1	54.4	58.6	69.7	63.9	60.6	72.0	64.8	57.4	54.9	49.3	57.5
1890	44.1	44.7	49.1	53.6	60.7	59.3	60.4	65.3	61.8	57.2	55.6	47.1	54.9
1891	47.5	50.3	52.7	55.4	59.2	65.7	67.8	68.4	66.1	58.5	56.4	47.2	57.9
1892	47.7	49.5	53.2	53.1	60.2	60.3	64.0	64.5	62.4	56.5	53.8	51.3	56.4
1893	47.9	49.1	54.4	56.0	62.6	65.3	69.0	65.5	63.1	59.3	55.3	53.0	58.4
1894	49.3	49.9	51.7	59.9	62.4	62.7	67.4	67.8	69.6	62.3	57.6	51.9	59.4
1895	49.6	52.9	54.5	58.4	62.3	64.6	65.0	63.5	65.3	61.7	56.5	50.2	58.7
1896	53.6	56.0	58.0	57.1	63.3	70.0	69.6	67.2	64.4	60.8	53.6	53.2	60.6
1897	49.7	52.2	52.5	62.7	65.6	68.4	70.5	66.0	66.4	60.9	53.9	48.6	59.8
1898	45.9	52.6	54.7	61.3	61.5	70.2	67.8	71.8	64.9	62.8	54.3	47.6	59.6
1899	51.6	49.0	52.8	56.4	58.0	68.3	67.7	67.4	64.9	61.0	58.8	49.3	58.8
1900	52.2	52.0	58.3	59.2	65.8	66.9	70.0	67.7	66.1	60.7	59.4	48.6	60.6
Mean (27 years)	47.9	49.6	53.1	56.8	60.8	64.8	65.4	65.2	63.7	59.0	53.8	49.6	57.6

MAXIMUM TEMPERATURES (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1878	64	64	68	76	80	84	86	88	92	86	70	64
1879	.....	66	77	82	83	92	84	99	92	84	64	65
1880	60	58	70	66	86	90	88	80	89	78	80	63
1881	61	65	77	74	82	77	82	78	86	67	67	63
1882	59	58	73	73	80	76	86	81	84	76	62	64
1883	60	69	74	65	88	98	91	90	96	78	68	62
1884	59	68	65	68	80	74	86	76	78	76	68	64
1885	66	68	75	72	86	75	88	92	92	82	74	69
1886	66	68	72	76	84	86	87	90	93	78	73	67
1887	70	65	74	80	100	92	80	83	91	89	77	61
1888	64	72	72	84	70	80	92	90	84	81	62	59
1889	62	70	76	76	84	79	88	82	90	84	71	64
1890	58	60	62	82	86	84	80	85	80	83	68	62
1891	62	60	72	80	79	99	86	98	84	78	70	60
1892	62	65	76	68	87	83	92	92	80	75	71	68
1893	60	65	76	71	83	94	86	82	72	82	69	72
1894	60	63	70	83	85	81	89	99	90	87	77	62
1895	62	69	71	75	89	94	92	88	93	86	79	64
1896	66	73	74	68	91	87	88	82	82	82	64	65
1897	59	65	65	82	91	92	90	85	92	72	65	60
1898	58	69	75	87	73	94	95	83	86	85	80	67
1899	73	67	67	85	84	85	88	90	92	93	71	64
1900	64	69	71	77	83	87	87	95	93	84	70	67
Absolute maximum and year	73 1899	73 1896	77 a 1879	87 1898	100 1887	99 1891	95 1898	99 a 1879	96 1883	93 1899	80 a 1880	72 1898

a Also other years.

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1874	5.22	1.32	2.16	0.99	0.79	0.00	0.00	0.00	0.00	2.46	3.71	0.07	16.72
1875	4.62	0.56	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.85	3.15	17.00
1876	6.30	4.61	4.16	0.20	0.00	0.00	0.00	0.00	0.00	2.29	0.00	0.00	17.56
1877	3.26	0.75	1.01	0.00	0.03	0.00	0.00	0.00	0.00	0.80	0.81	1.34	8.00
1878	9.87	9.74	3.58	1.29	0.06	0.00	0.00	0.00	0.48	0.80	0.72	0.27	26.81
1879	3.86	3.48	5.85	1.24	1.58	0.09	0.00	0.00	0.00	0.52	1.77	3.14	21.53
1880	2.51	1.64	2.13	8.70	0.76	0.00	0.00	0.00	0.00	0.00	0.52	11.37	27.63
1881	4.26	2.34	0.80	1.58	0.03	0.22	0.00	0.00	0.16	0.69	1.16	3.01	14.25
1882	0.79	1.72	3.98	1.11	0.08	0.00	0.00	0.00	0.18	1.50	2.98	0.84	13.18
1883	1.93	0.59	2.72	1.81	2.92	0.00	0.00	0.00	0.30	1.14	0.21	0.92	12.54
1884	3.40	4.87	6.38	3.40	0.05	2.91	0.00	T.	0.17	1.78	0.21	7.59	30.76
1885	2.36	0.19	0.52	4.20	0.05	0.10	0.00	0.00	0.02	0.13	6.88	2.34	16.79
1886	6.20	0.35	1.20	4.50	0.15	0.00	0.07	0.00	0.00	1.69	0.77	0.95	15.88
1887	1.21	9.16	0.72	1.68	0.00	0.00	0.00	0.00	0.47	0.00	1.08	3.44	17.76
1888	4.73	1.21	3.97	0.13	0.67	0.08	0.00	0.00	1.03	0.00	4.16	4.04	20.02
1889	1.17	0.75	6.94	0.84	1.08	0.00	0.00	0.00	0.00	5.98	4.01	12.44	33.21
1890	8.69	4.39	3.94	0.79	0.58	0.00	0.00	0.00	0.10	0.10	0.00	2.86	21.45
1891	0.90	9.06	2.57	1.95	0.35	0.00	0.00	0.00	0.65	0.02	0.65	7.86	24.01
1892	1.88	1.55	2.49	1.01	1.57	0.00	0.00	0.00	0.03	1.45	7.67	5.91	23.56
1893	3.09	3.68	6.49	1.92	0.00	0.00	0.00	0.00	0.09	0.14	2.74	2.95	21.10
1894	7.42	6.62	1.07	0.94	0.61	0.00	0.00	0.00	1.75	3.03	0.72	12.12	34.28
1895	9.50	3.23	0.05	1.61	0.38	0.00	0.00	0.00	0.31	0.33	2.08	1.63	19.12
1896	8.89	0.24	2.94	5.00	0.83	0.00	0.00	0.46	0.52	1.31	4.87	2.98	28.04
1897	2.02	5.76	6.42	0.06	0.00	0.05	0.00	0.00	0.00	2.61	1.00	1.84	19.76
1898	1.46	3.04	0.64	0.25	0.94	0.19	0.00	0.00	1.57	0.81	0.55	1.35	10.80
1899	4.21	0.37	9.02	1.02	0.67	0.71	0.00	0.02	0.00	3.89	4.70	2.57	27.18
1900	5.55	0.84	2.19	1.23	0.55	0.00	0.00	0.00	0.50	1.64	5.39	2.31	20.20
Average (27 years)	4.27	3.04	3.14	1.76	0.55	0.16	T.	0.02	0.31	1.30	2.49	3.68	20.71

MINIMUM TEMPERATURES (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1878	28	38	37	45	50	54	56	54	54	48	44	30
1879	.....	34	47	52	44	55	56	50	50	48	38	25
1880	26	30	34	42	50	52	56	50	48	46	30	34
1881	34	40	36	45	50	49	49	50	48	34	30	32
1882	27	26	32	39	48	50	52	54	50	42	32	31
1883	25	28	41	45	48	52	52	50	50	38	31	30
1884	31	28	38	43	50	54	55	51	50	43	39	28
1885	34	36	41	43	50	52	58	56	54	46	43	40
1886	34	44	40	48	54	55	57	56	50	45	39	40
1887	34	32	42	44	50	50	54	54	50	45	32	38
1888	26	40	40	50	50	60	60	56	52	44	36	38
1889	32	32	40	50	50	55	50	50	45	46	38	36
1890	30	30	38	44	48	50	50	52	51	40	38	34
1891	30	32	39	44	50	50	55	56	52	42	38	30
1892	35	35	42	44	48	50	54	52	53	43	37	35
1893	35	36	39	46	52	55	58	56	52	44	38	39
1894	32	36	39	48	51	52	56	57	54	49	42	36
1895	35	37	39	46	50	53	53	57	53	51	41	34
1896	38	41	39	47	51	55	59	60	55	48	38	42
1897	37	36	39	50	53	58	58	56	54	46	40	34
1898	30	37	39	45	53	58	58	57	55	48	37	33
1899	37	32	42	48	48	56	59	57	51	45	44	35
1900	39	37	45	44	57	57	60	60	53	45	44	33
Absolute minimum and year	25 1883	26 1882	32 1882	39 1882	44 1879	49 1881	49 1881	50 [a]1879	45 1889	34 1881	30 [a]1880	25 1879

[a] Also other years.

SAN JOSE.

San Jose, the county seat of Santa Clara County, lies about 50 miles southeast of San Francisco, or about 8 miles southeast of the lower end of San Francisco Bay.

The elevation of San Jose varies from about 80 to 100 feet above sea level, and an elevation of 400 feet, except immediately south of the city, is not reached within a radius of 5 miles. Within 10 miles elevations ranging from 400 to 2,000 feet are reached. The general movement of the air is from the northwest. The influence of the Golden Gate, with its strong indraft of cool, fog-laden air is noticeable throughout the Santa Clara Valley. The valley, however, is somewhat sheltered from the strong westerly surface currents prevalent on the coast of California. Summer fogs, especially when low, do not drift inland, being as a rule barred by the mountains. High fogs occasionally blow over and down the mountain sides. Low winter fogs are not infrequent, and are probably due as elsewhere to a settling of the cooler air in the lowlands.

The mean annual temperature, based upon records extending over a period of twenty-six years, is 58°. The coldest month is January, with a mean temperature of 48°, and the warmest is July, 66.7°.

The highest temperature recorded within this period of twenty-six years was 104°. The temperature has reached 100° but five times. The lowest temperature was 18°, or an absolute range of 86°. No frost data are available.

The mean annual rainfall for twenty-six years is 14.88 inches. About half of this falls in December, January, and February. July and August are practically rainless, as only three times during July and once in August has rain fallen to an appreciable extent. The rain has exceeded 20 inches in four years and less than 10 has fallen in four years. The driest year was 1875, with 5.51 inches, and the year with greatest rainfall was 1889, with 25.55 inches. The greatest monthly rainfall was 10.55 in December, 1889.

Maximum Temperatures (Degrees Fahrenheit).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1878	78	68	75	74	83	94	90	92	86	82	75	75
1879	.....	72	86	82	86	94	94	99	93	87	72	74
1880	66	66	78	66	89	89	91	90	92	87	75	68
1881	66	72	83	85	89	82	93	84	92	84	75	64
1882	64	62	80	69	88	84	92	90	93	80	74	68
1883	66	82	82	70	99	103	92	92	96	81	71	63
1884	70	71	72	71	81	80	94	90	84	83	72	72
1885	68	68	80	76	90	78	86	95	98	90	74	66
1886	64	72	74	75	83	93	96	94	94	88	70	65
1887	71	70	78	84	104	95	92	87	94	88	80	65
1888	65	78	75	86	82	88	96	98	93	89	74	65
1889	62	71	78	80	89	85	93	89	95	86	75	62
1890	60	68	72	82	93	90	92	90	86	85	76	70
1891	68	65	76	83	87	104	99	101	89	88	76	63
1892	65	67	76	74	95	90	100	96	87	85	78	72
1893	62	67	78	74	85	94	89	90	79	81	77	78
1894	63	64	76	85	84	89	92	98	94	87	77	60
1895	62	71	71	81	87	96	94	92	92	86	84	70
1896	65	75	73	68	93	94	94	85	83	88	69	64
1897	60	73	70	84	90	92	90	88	.....	78	69	64
1898	60	70	73	87	76	89	93	92	87	82	78	65
1899	78	80	72	80	86	88	87	82	89	90	70	62
Absolute maximum and year	78	82	86	87	104	104	100	101	98	90	84	78
	[a]1878	1883	1879	1898	1887	1891	1892	1891	1885	[a]1885	1895	1893

[a] Also 1899.

Minimum Temperatures (Degrees Fahrenheit).

1878	27	38	37	40	47	41	50	52	48	40	30	25
1879	.....	30	37	41	45	50	48	52	52	42	32	24
1880	27	30	33	40	41	50	52	50	48	42	25	32
1881	34	35	35	45	48	47	52	52	47	32	31	32
1882	24	30	35	40	44	50	52	52	50	39	32	30
1883	24	24	39	37	42	54	54	52	52	41	30	29
1884	30	28	39	44	48	52	52	53	48	40	37	30
1885	35	36	40	40	48	50	50	54	50	44	38	34
1886	32	40	37	40	48	50	54	53	48	41	35	34
1887	31	32	38	42	44	46	50	50	50	45	30	33
1888	22	35	38	44	48	54	51	54	55	43	38	39
1889	32	32	41	47	51	56	55	52	50	46	38	34
1890	30	32	37	43	46	53	52	51	50	42	38	35
1891	30	31	38	44	50	51	53	55	49	43	36	31
1892	37	35	42	42	47	52	53	54	48	42	37	34
1893	35	36	38	44	45	51	48	52	45	41	37	30
1894	18	24	26	29	32	35	41	42	37	35	27	22
1895	32	37	36	43	46	50	54	53	48	48	34	30
1896	33	38	37	42	42	52	55	53	50	43	30	37
1897	26	24	26	34	35	40	54	54	.....	42	35	29
1898	30	35	36	42	50	50	48	54	52	47	36	30
1899	34	30	37	46	44	53	54	52	50	45	46	36
Absolute minimum and year	18	24	26	29	32	35	41	42	37	32	25	22
	1894	[a]1883	[b]1894	1894	1894	1894	1894	1894	1894	1881	1880	1894

[a] Also 1894 and 1897.

[b] Also 1897.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1874	46.8	49.3	51.8	58.8	67.7	76.1	71.1	68.7	71.0	64.3	56.8	57.9	61.7
1875	49.8	53.3	54.4	62.1	66.6	68.5	68.8	70.1	64.7	65.5	58.5	53.1	60.9
1876	42.2	49.6	57.8	57.9	59.2	69.6	65.2	66.1	65.2	64.0	55.5	47.6	58.3
1877	50.6	51.4	55.8	55.1	57.2	68.0	67.4	64.9	63.9	58.2	54.1	51.9	58.2
1878	53.6	52.1	54.1	54.8	50.1	64.8	64.8	65.7	62.2	56.4	52.8	46.1	56.5
1879	46.9	52.8	55.9	56.5	57.8	66.1	66.3	67.1	64.0	59.5	52.4	46.5	57.6
1880	45.0	45.7	49.0	52.9	59.0	62.1	64.7	65.7	62.1	58.9	48.5	52.6	55.5
1881	57.7	53.2	54.5	60.0	62.3	60.5	66.3	64.3	62.2	56.8	49.7	47.1	57.9
1882	40.4	45.3	52.1	51.9	58.9	61.9	65.6	65.6	65.4	56.6	52.0	47.3	55.2
1883	43.7	46.1	53.0	53.7	59.8	68.8	66.8	66.3	67.1	57.5	50.8	47.3	56.7
1884	48.0	48.6	52.6	55.2	60.2	61.6	65.4	65.6	62.0	56.3	54.5	51.7	56.8
1885	49.4	51.9	55.8	55.5	60.2	61.3	65.8	65.4	64.6	61.6	56.3	52.4	58.3
1886	49.1	53.3	51.0	54.7	60.5	63.9	66.3	66.7	63.7	57.3	52.3	52.4	57.6
1887	50.3	48.2	54.8	54.3	58.6	63.9	64.8	63.3	64.7	62.5	54.6	50.5	57.5
1888	46.4	52.6	52.8	58.3	59.8	65.2	66.8	68.6	68.0	62.3	56.5	52.9	59.2
1889	47.6	50.9	56.7	59.7	61.9	66.2	66.1	67.2	67.7	61.5	56.3	50.5	59.4
1890	45.0	48.7	53.9	56.7	63.5	63.6	65.9	66.8	64.9	60.5	55.1	48.6	57.8
1891	49.0	51.3	54.4	55.4	60.0	65.2	69.4	69.4	65.4	61.9	56.5	48.2	58.8
1892	50.7	52.5	54.9	54.5	61.4	62.7	66.0	66.8	64.2	60.0	55.8	50.3	58.3
1893	47.7	50.0	53.1	54.4	58.7	61.1	65.8	65.7	62.0	58.6	55.5	52.3	57.1
1894	47.3	48.6	49.8	57.6	60.8	62.1	67.6	67.7	67.6	61.0	57.0	50.0	58.1
1895	48.7	53.6	53.5	56.8	60.2	66.2	66.6	67.3	64.0	62.1	55.0	49.3	58.6
1896	49.0	54.8	56.1	53.4	59.4	75.2	69.3	65.7	62.7	62.0	52.2	51.2	59.2
1897	47.6	49.8	48.5	59.5	62.6	65.8	68.2	65.6	64.8	58.5	51.4	47.6	57.5
1898	45.4	53.3	51.8	57.7	57.0	65.3	65.1	65.2	63.1	61.1	55.0	46.3	57.2
1899	56.4	52.2	54.7	59.1	58.4	67.8	67.4	65.5	66.0	60.4	57.6	50.4	59.7
Means (26 years)	48.2	50.7	53.6	56.4	60.1	65.5	66.7	66.4	64.7	60.2	54.1	50.1	58.1

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

1874	2.61	0.77	2.83	0.87	0.21	0.00	0.00	0.00	0.10	1.81	1.91	0.08	11.19
1875	2.75	0.41	0.39	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	1.51	5.51
1876	4.08	3.41	3.11	0.41	0.25	0.00	0.00	0.00	0.08	1.35	0.02	0.00	12.71
1877	2.23	0.48	0.78	0.00	0.05	0.00	0.00	0.00	0.00	0.37	0.85	1.87	6.63
1878	5.53	6.94	2.22	1.48	0.02	0.00	0.00	0.00	0.48	0.80	0.76	0.97	19.20
1879	1.48	3.18	5.85	1.24	1.58	0.06	0.00	0.00	0.00	0.87	1.79	2.99	19.04
1880	1.52	1.34	0.96	3.66	0.67	0.00	0.00	0.00	0.00	0.00	0.49	5.60	14.24
1881	2.12	2.04	0.80	1.28	0.00	0.12	0.00	0.00	0.02	0.45	0.88	1.83	9.54
1882	1.17	1.49	4.26	1.10	0.55	0.00	0.00	0.00	0.04	0.87	1.32	0.82	11.62
1883	3.86	0.94	2.70	0.66	2.18	0.00	0.00	0.00	0.09	0.67	0.28	0.37	11.75
1884	3.18	3.68	6.23	3.38	0.05	2.15	0.00	0.00	0.08	1.50	0.06	3.90	24.21
1885	1.83	0.18	0.86	2.75	0.11	T.	0.00	0.00	0.00	0.06	7.39	2.11	15.29
1886	3.59	1.12	1.89	4.47	0.00	0.00	0.03	0.00	0.00	0.49	0.73	0.71	13.03
1887	0.68	6.81	0.63	1.28	0.00	0.00	0.02	0.00	0.61	0.03	0.70	2.53	13.29
1888	3.06	1.09	3.00	0.31	0.60	0.22	0.00	0.00	0.60	0.00	3.88	2.44	15.20
1889	0.50	0.70	5.80	0.79	0.96	0.04	0.00	0.00	0.00	4.48	1.73	10.55	25.55
1890	6.52	3.64	2.08	0.55	0.75	0.00	0.00	0.00	0.05	0.00	0.05	2.40	16.04
1891	0.55	5.27	2.46	1.79	0.26	0.05	0.00	0.00	0.37	0.08	0.46	5.84	17.13
1892	1.11	1.60	4.75	0.65	1.60	0.05	0.00	0.00	0.00	1.00	4.00	7.77	22.53
1893	2.95	2.68	5.12	1.35	0.30	0.00	0.00	0.00	0.00	0.00	0.81	1.69	14.90
1894	4.73	2.61	0.69	0.63	1.36	0.40	0.00	0.00	1.08	1.32	0.55	7.80	21.17
1895	6.28	1.42	1.46	2.05	1.36	0.00	0.00	0.00	0.05	0.83	1.08	0.84	15.37
1896	5.17	0.27	2.22	2.79	0.44	0.00	0.01	0.74	0.32	1.30	2.82	2.55	18.63
1897	1.68	3.43	2.64	0.91	0.16	T.	0.00	0.00	0.21	1.01	0.37	1.20	11.61
1898	0.93	1.93	0.52	0.20	0.44	0.06	0.00	0.00	1.13	0.61	0.45	0.44	6.71
1899	1.88	0.21	4.17	0.48	0.65	T.	0.00	0.00	0.00	3.26	2.70	1.43	14.78
Average (26 years)	2.77	2.22	2.63	1.35	0.56	0.14	T.	0.03	0.20	0.89	1.39	2.70	14.88

MOUNT HAMILTON.

[Lick Observatory.]

The director of the Lick Observatory, Dr. Wallace W. Campbell, has kindly placed at the disposal of the Weather Bureau the observations made at Mount Hamilton by different members of the observatory staff from 1888 to 1900. The following named gentlemen have at various times acted as observers: Charles B. Hill, A. J. Burnham, H. K. Curtis, A. O. Leuschner, A. L. Colton, C. D. Perrine, R. G. Aitken, W. H. Wright, H. K. Palmer, E. F. Coddington, and A. J. Cloud.

The observatory is situated on Mount Hamilton, a peak in the Coast Range, in Santa Clara County. The elevation of the station is 1,283 meters (4,209 feet) above sea level. The observatory is situated in latitude 37° 20′ 25.6″ north, longitude 121° 38′ 4.22″ west. The mountain is about 14 miles in an air line directly east of the city of San Jose.

The records for temperature at Mount Hamilton cover a period of twelve years and for precipitation twenty years. The mean annual temperature is 52°. The coldest month is January, with a mean temperature of 39.7°, and the warmest month is July, with a mean temperature of 69.4°. The highest temperature recorded is 94°, on July 1, 1891, and the lowest 13°, on February 4, 1899.

Rain falls in every month of the year, but in July and August the showers are light and infrequent. The mean annual precipitation is 32 inches, which, it is interesting to notice, is more than double that of San Jose, where the mean, based upon records covering twenty-six years, is but 14.88 inches. The ratio of the rainfall on the mountain to that in the valley appears to be fairly constant for all months in the year. December is the month of heaviest precipitation on the mountain. More than half of the annual rainfall occurs in the four months of December, January, February, and March. The annual precipitation has exceeded 30 inches during eight years of the twenty, and has fallen below 20 inches during two years. These dry years were 1885, when the rainfall amounted to but 18.23 inches, and the memorable 1898, when but 17.11 inches fell. The years of maximum rainfall were 1884, when 90.12 inches fell, and 1894, when 44.49 inches fell.

MAXIMUM TEMPERATURES (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1889	60	70	64	74	82	84	92	92	86	84	63	46
1890	55	61	60	71	80	82	90	88	84	81	77	63
1891	61	49	59	72	77	89	94	92	85	77	71	60
1892	60	58	66	62	84	84	94	91	88	79	88	64
1893	72	74	62	65	72	78	87	87	78	72	67	65
1894	58	54	64	72	72	79	86	92	85	79	77	50
1895	58	64	64	74	79	90	85	91	83	81	80	67
1896	65	67	66	55	83	85	91	84	82	82	67	63
1897	59	60	53	73	75	83	89	91	80	70	70	71
1898	62	65	60	76	73	85	90	91	86	76	75	57
1899	65	61	68	78	75	85	91	80	91	75	61	72
1900	63	58	67	66	74	83	86	86	78	77	74	72
Absolute maximum and year	72 1893	74 1893	68 1899	76 1898	84 1892	90 1895	94 1891	92 a1889	91 1899	84 1889	88 1892	72 a1899

a Also other years.

MINIMUM TEMPERATURES (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1889	27	22	31	30	32	46	50	51	44	34	30	24
1890	17	18	25	31	30	32	49	54	46	32	30	29
1891	26	21	26	29	32	31	36	45	33	33	33	17
1892	29	25	26	26	28	33	51	50	44	30	27	22
1893	25	22	23	25	34	35	41	56	36	33	26	26
1894	17	16	20	25	27	31	56	55	35	33	34	28
1895	23	32	22	24	31	35	41	49	35	41	28	23
1896	27	25	18	24	27	34	48	44	38	33	18	28
1897	26	21	19	28	33	36	55	48	39	33	29	22
1898	17	27	21	27	33	33	50	52	34	32	28	22
1899	24	13	25	26	26	35	56	41	43	31	32	27
1900	30	24	31	28	30	42	51	44	38	31	30	28
Absolute minimum and year	17 [a] 1890	13 1899	18 1896	24 [a] 1895	26 1899	31 [a] 1891	36 1891	41 1899	33 1891	30 1892	18 1896	17 1891

[a] Also other years.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	39.5	43.9	44.8	50.3	52.8	67.4	70.7	70.4	66.9	50.5	48.5	35.2	53.4
1890	30.2	36.8	40.5	47.6	54.5	57.6	59.8	68.9	65.9	58.1	55.5	45.7	51.8
1891	41.6	35.0	41.0	44.3	51.4	55.5	70.9	71.5	60.7	58.7	51.8	35.8	51.5
1892	43.6	41.7	42.6	42.3	52.6	57.3	66.9	70.8	62.1	53.2	49.7	39.8	51.9
1893	36.0	37.7	37.3	40.5	51.9	58.8	67.9	71.8	55.4	51.0	47.0	45.0	50.0
1894	35.9	35.6	40.4	49.4	51.6	52.6	71.3	71.4	63.5	55.5	57.5	37.2	51.8
1895	36.4	45.6	42.8	47.2	52.2	65.2	67.2	70.4	59.0	59.9	47.9	41.4	52.9
1896	45.2	46.5	43.4	37.6	46.6	64.6	73.2	67.8	61.7	57.8	44.7	45.4	52.9
1897	42.1	36.4	32.6	51.0	58.0	57.8	70.8	71.5	59.4	45.9	45.3	42.9	51.2
1898	35.7	42.8	39.1	50.8	47.9	62.0	71.4	71.2	61.8	56.0	46.5	43.3	52.4
1899	42.5	41.0	39.6	47.6	46.3	63.7	71.6	61.3	69.8	50.2	46.9	45.6	52.2
1900	47.5	43.0	48.1	43.0	52.9	63.8	71.6	62.1	56.3	51.6	51.1	47.2	53.2
Mean (12 years)	39.7	40.5	41.0	46.0	51.6	60.5	69.4	69.1	61.9	54.0	49.4	42.0	52.1

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

1881	3.51	5.99	1.13	0.98	0.09	0.33	0.00	0.00	0.10	0.33	0.91	9.72	23.09
1882	3.55	2.90	5.40	4.70	0.48	1.06	0.00	0.00	0.00	6.16	3.45	1.93	29.63
1883	3.10	3.75	8.66	2.66	7.55	0.00	0.00	0.00	0.65	2.15	1.48	2.05	32.05
1884	5.60	12.76	16.35	11.96	1.24	3.85	0.00	0.15	0.65	3.71	0.01	33.84	90.12
1885	1.99	0.57	1.15	2.08	0.16	0.36	0.00	0.00	0.15	0.05	1.92	9.80	18.23
1886	4.40	1.80	5.77	6.79	0.70	0.00	0.00	0.00	0.00	0.60	2.82	2.34	25.22
1887	2.83	7.80	1.39	5.75	0.25	0.30	0.04	0.00	0.33	0.09	0.90	11.25	30.93
1888	10.04	1.38	3.40	0.68	1.25	0.67	0.00	0.02	0.49	0.03	3.27	4.23	25.46
1889	1.04	1.42	6.17	1.92	3.21	0.05	0.00	0.00	0.00	4.38	4.46	13.19	35.84
1890	7.93	6.60	4.39	1.79	2.42	0.00	0.00	0.00	0.80	0.02	0.58	5.39	29.92
1891	1.38	7.12	4.10	3.08	1.01	0.57	0.00	0.00	0.28	0.61	0.38	9.54	28.07
1892	1.97	2.99	5.98	1.90	3.52	0.32	0.00	T.	0.24	1.38	10.30	5.56	34.16
1893	3.29	3.45	8.99	3.61	0.95	0.16	0.00	0.00	0.48	0.66	4.01	3.58	29.18
1894	9.74	10.52	2.54	0.89	2.78	0.64	0.02	T.	1.64	2.98	0.84	11.90	44.49
1895	10.00	3.08	1.46	2.30	2.39	0.00	0.01	0.00	0.08	0.78	2.46	3.16	25.72
1896	9.54	1.08	3.83	6.70	2.10	0.02	T.	0.28	0.47	1.85	5.86	4.91	36.64
1897	3.50	7.42	6.45	0.82	0.28	0.38	0.00	0.00	0.07	1.25	1.51	2.70	24.38
1898	2.30	4.16	2.04	0.84	2.41	0.38	0.00	0.00	0.29	1.33	1.23	2.13	17.11
1899	5.63	0.75	11.11	1.40	1.47	0.39	0.00	0.12	T.	6.37	4.92	4.16	36.32
1900	3.26	1.70	3.37	4.06	1.35	T.	0.01	0.02	0.08	3.48	7.76	2.21	27.30
Average (20 years)	4.73	4.36	5.18	3.25	1.78	0.47	T.	0.03	0.34	1.91	2.95	7.18	32.19

Mean Relative Humidity (Per Cent).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1891	61.1	91.2	77.7	77.2	62.0	65.8	57.4	61.0	66.7	55.6	56.8	83.4
1892	60.8	.....	.....	.....	.....	.....	47.9	44.7	57.8	64.4	62.3	72.7
1893	52.4	76.9	87.4	73.4	57.1	48.8	46.3	54.5	81.1	84.9	67.6	65.3
1894	79.2	80.7	72.3	56.8	72.8	67.9	41.9	33.1	48.8	61.7	48.2	87.4
1895	82.2	59.8	73.0	64.5	58.5	37.1	44.6	55.7	50.2	53.0	58.0	65.2
1896	72.2	52.7	78.3	84.2	70.7	39.9	38.1	42.1	52.5	52.7	69.1	66.6
1897	70.5	88.3	90.9	53.9	51.4	56.7	31.0	36.8	51.9	61.3	63.9	62.8
1898	77.9	72.7	74.1	54.7	67.6	57.5	30.3	38.2	53.2	57.6	57.3	56.3
1899	70.6	61.4	83.2	64.8	66.7	45.4	33.9	54.0	40.2	67.8	78.6	67.4
1900	66.1	68.5	73.0	76.9	65.5	49.7	39.9	.....	.....	.....	.....	.....
Mean	69.3	72.5	78.9	67.4	63.6	52.1	41.1	46.7	55.8	62.1	62.4	69.7

Highest monthly mean humidity 91.2, February, 1891.
Lowest monthly mean humidity 30.3, July, 1898.

Total Monthly Wind Movement (Miles).

1895	[a]9,581	9,766	.....	.....	12,098	9,260	7,837	6,519	6,881	4,974	11,550	10,823
1896	14,758	10,042	8,035	9,987	9,655	10,350	8,102	6,705	6,195	9,229	9,541	12,183
1897	9,247	8,139	9,796	9,883	12,011	10,495	7,860	6,333	6,865	10,238	9,997	9,832
1898	11,309	9,321	8,824	10,105	8,635	.....	.....	7,386	6,976	8,838	12,068	11,838
1899	13,662	12,772	11,068	10,166	11,703	8,644	8,033	7,604	7,493	10,390	8,500	12,236
1900	10,632	11,173	8,811	10,953	10,644	8,106	7,086	6,856	7,215	8,034	7,296	10,002
Average	11,565	10,202	9,307	10,219	10,791	9,371	7,784	6,900	6,988	8,617	9,825	11,152

[a] Seven days' record missing (15th to 21st).

Note.—November 16–17, 1893, maximum hourly velocity, 80 miles; velocity of gusts probably over 100 miles. January 15, 1895, highest hourly velocity (estimated), 80 to 90 miles.

LOCAL CLIMATOLOGY.

APTOS.

[Data from records of Southern Pacific Railway Company.]

Aptos is situated in Santa Cruz County, on Monterey Bay, about 7 miles southeast of the city of Santa Cruz, in latitude 36° 58′ north, longitude 121° 54′ west; elevation 102 feet above sea level.

The mean annual temperature, based upon records covering sixteen years, is 56°, which is practically the same as that of San Francisco, and 2.4° lower than the annual mean at Santa Cruz. June, July, and August are the warmest months, with mean temperatures of 62.5°, 62.3°, and 61.4°, respectively; September is also a warm month, with a mean of 60.9°. The coldest month is January, with a mean of 48.5°; the means for February and December are nearly the same. The maximum seldom exceeds 90°, the highest recorded in recent years being 91°, in June, 1898. Minimum temperatures of 26° are recorded in January, 1898, December, 1900, and February, 1901.

The average annual precipitation during the past sixteen years is 25.63 inches, about 1 inch less than that of Santa Cruz. The greatest precipitation occurs in December and January, but heavy rains also fall in November, February, and March. The rainfall during June, July, August, and September is very light and infrequent. During the month of December, 1889, the rainfall was 18.29 inches, and the total of that year was 37.94 inches.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1885	49.2	51.1	55.4	57.7	61.7	65.4	64.9	63.5	60.2	59.3	56.0	53.7	58.2
1886	51.0	54.8	52.3	56.6	59.3	58.9	61.4	61.9	60.9	55.1	51.6	53.1	56.4
1887	49.1	47.0	55.5	55.7	58.9	63.4	61.0	60.1	60.1	59.6	54.5	49.2	56.2
1888	46.0	51.9	53.0	58.4	59.7	67.9	65.9	63.2	61.8	59.1	53.9	54.1	57.9
1889	48.6	51.6	56.6	59.7	59.6	62.5	63.4	61.9	62.9	60.7	56.8	52.3	58.0
1890	46.2	49.0	53.6	56.2	61.0	61.9	62.0	62.6	61.2	59.3	55.0	54.4	56.9
1891	49.1	49.7	53.9	55.5	57.9	63.5	62.8	62.6	62.4	57.8	55.2	47.8	56.5
1892	50.9	52.8	53.8	55.4	61.3	63.2	69.2	63.4	60.7	58.3	53.0	50.2	57.7
1893	51.1	47.4	51.8	51.6	58.8	59.5	59.5	60.7	60.5	57.3	54.5	52.4	55.4
1894	45.6	48.2	52.1	55.8	57.1	61.9	63.9	64.3	63.1	56.0	51.1	46.9	55.5
1895	44.8	47.8	48.4	50.0	55.1	56.5	57.9	56.8	66.0	57.5	51.3	44.0	53.0
1896	44.9	47.9	47.0	52.3	54.6	60.2	62.7	60.3	54.0	52.7	45.8	44.6	52.3
1897	42.0	45.1	47.9	61.1	63.4	72.7	63.6	60.8	64.1	59.5	51.1	48.1	56.6
1898	56.8	48.7	50.4	44.9	55.4	62.6	60.9	59.8	58.8	58.1	50.8	44.9	54.4
1899	51.8	47.4	51.6	56.2	55.0	59.9	58.9	60.3	58.0	54.8	53.0	49.7	54.7
1900	48.8	51.5	54.2	51.9	61.9	59.6	59.0	60.7	60.2	59.6	55.2	49.3	55.7
Mean (16 years)	48.5	49.5	52.3	54.9	58.8	62.5	62.3	61.4	60.9	57.8	53.0	49.7	56.0

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1885	2.86	0.19	0.43	1.78	0.13	0.00	0.18	0.00	0.07	0.02	10.65	3.83	20.14
1886	7.61	0.80	4.09	7.10	0.27	0.00	0.00	0.00	0.00	0.70	0.84	1.53	22.94
1887	0.95	8.82	0.76	1.61	0.19	0.00	0.00	0.00	0.47	0.05	1.11	3.72	17.68
1888	5.85	1.59	5.32	9.50	0.79	0.25	0.00	0.00	0.45	0.00	5.75	4.31	24.81
1889	0.50	0.87	5.90	0.85	1.71	0.00	0.00	0.00	0.00	7.49	2.33	18.29	37.94
1890	10.29	4.60	3.16	1.25	1.66	0.00	0.00	0.00	0.40	9.40	0.28	2.93	24.97
1891	1.08	13.16	3.01	2.84	0.20	0.00	0.00	0.00	1.00	0.07	0.27	7.64	29.27
1892	0.92	4.90	2.67	1.95	2.47	0.00	0.00	0.00	0.65	1.36	3.66	8.72	27.30
1893	3.40	3.41	7.97	1.54	0.42	0.00	0.00	0.00	0.22	0.33	3.16	3.48	23.93
1894	7.56	6.05	0.92	0.89	2.50	0.24	0.00	0.00	2.00	2.98	0.71	13.32	37.12
1895	11.80	2.95	2.85	1.88	1.39	0.00	0.00	0.00	0.00	0.15	1.53	2.31	24.86
1896	9.63	0.00	2.90	5.01	1.59	0.00	0.00	0.76	0.26	1.64	5.92	4.49	32.20
1897	1.28	6.27	4.03	0.00	0.30	0.10	0.00	0.00	0.00	1.69	0.82	1.39	15.88
1898	1.23	3.52	1.17	0.32	1.17	0.20	0.00	0.00	1.40	0.76	0.75	1.84	12.36
1899	6.43	0.22	13.14	1.25	1.00	0.00	0.00	0.00	0.00	6.01	4.24	4.36	36.65
1900	4.56	0.53	2.19	1.53	0.59	0.00	0.00	0.00	0.27	1.58	3.95	1.82	22.02
Average (16 years)	4.75	3.62	3.78	1.89	1.02	0.05	0.01	0.05	0.45	1.57	3.19	5.25	25.63

AUBURN.

Auburn is the county seat of Placer County, a narrow county in the central eastern portion of California, extending from Lake Tahoe and the Nevada line westward to Sutter County and the southern portion of Nevada County, and is situated in latitude 38° 54′ north, longitude 121° 50′ west, a short distance southwest of the junction of the middle and north forks of the American River. The elevation is 1,360 feet, with the land sloping eastward to the American River, where the elevation of the channel is about 500 feet. The Sierra Nevada Mountains, running through the eastern portion of the county, reach an elevation of 7,000 feet. The foothills are excellent fruit-growing districts.

The general movement of the air is from the north, northwest, and northeast. The date of the last killing frost in the spring of 1899 was May 2, and the first in autumn, 1899, was October 15. The mean annual temperature, based upon records covering a period of twenty-nine years, is 60.1°. The coldest month is January, with a mean temperature of 45.5°, and the warmest is July, with a mean temperature of 76.7°. During the months of June, July, August, and September the mean temperature exceeds 70°.

The highest temperature recorded within a period of twenty-two years was 110°, which occurred during the months of July and August, 1898. The lowest temperature recorded was 12°, in January, 1888. Reliable frost data are not available.

The mean annual rainfall for twenty-nine years is 33.58 inches. Two-thirds of this rainfall occurs between December and April. Rain seldom falls during July or August. The rainfall has exceeded 40 inches during six years of the twenty-nine, and in 1884 exceeded 50 inches. There have been but two years in the past twenty-nine when the rainfall did not reach 20 inches, viz., 1877, when but 18.07 inches fell, and 1898, when 19.96 inches fell.

MAXIMUM TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1878	64	66	72	80	88	94	.....	99	94	87	76	70
1879	60	.....	80	81	83	92	98	100	97	86	78	65
1880	69	65	72	81	86	89	97	95	94	86	74	60
1881	69	72	79	79	85	92	99	93	94	78	70	59
1882	58	60	79	82	92	92	98	108	98	77	.....	70
1883	62	84	76	72	90	100	100	99	95	79	72	69
1884	65	78	70	78	84	88	95	98	98	82	76	71
1885	65	69	77	80	95	90	96	103	97	93	78	67
1886	63	72	72	78	89	95	101	101	96	81	69	64
1887	65	69	78	87	100	106	100	98	98	94	77	70
1888	64	77	76	89	86	94	101	105	103	91	74	69
1889	64	76	79	83	89	98	105	101	98	95	80	58
1890	59	70	72	81	99	93	105	98	94	87	84	60
1891	69	62	74	82	89	108	108	105	98	98	82	65
1892	74	70	87	75	94	94	96	105	94	90	80	80
1893	76	77	80	78	90	95	103	102	90	87	78	79
1894	75	75	84	85	90	95	104	106	97	90	82	72
1895	66	80	81	85	89	104	102	105	98	94	95	73
1896	77	85	79	72	92	.....	104	95	92	90	68	74
1897	76	70	73	87	94	95	104	104	88	87	75	77
1898	69	72	70	89	82	93	110	110	98	85	80	75
1899	85	82	88	82	85	101	102	93	98	88	75	59
Absolute maximum and year	85 1899	85 1896	88 1899	89 [a]1888	100 1887	108 1891	110 1898	110 1898	103 1888	98 1891	95 1895	80 1892

[a] Also 1898.

MINIMUM TEMPERATURE (DEGREES FAHRENHEIT).

1878	26	31	32	34	49	54	.....	54	48	45	36	27
1879	25	.....	36	45	43	50	54	56	54	44	32	18
1880	28	28	30	36	36	50	62	55	50	46	26	35
1881	28	33	32	42	50	52	54	50	52	40	27	30
1882	23	25	23	33	43	48	63	60	48	32	.....	25
1883	18	20	39	32	41	58	61	54	52	42	32	29
1884	31	20	23	40	50	50	54	56	48	40	39	23
1885	30	31	40	38	45	51	56	58	54	50	38	29
1886	25	35	28	40	46	60	58	58	53	32	30	31
1887	27	24	36	36	40	50	57	52	38	48	30	30
1888	12	28	33	42	46	52	54	54	54	46	35	32
1889	27	32	38	43	46	55	56	59	46	45	40	37
1890	26	24	34	45	45	34	54	55	52	40	38	35
1891	32	32	36	42	47	52	54	56	50	44	41	28
1892	35	35	38	41	45	53	60	58	57	44	35	34
1893	33	29	34	39	47	53	59	48	53	43	39	35
1894	25	29	29	40	43	53	62	60	50	50	40	33
1895	30	36	32	35	45	50	56	55	49	47	37	25
1896	31	37	27	38	44	.....	58	58	55	47	30	36
1897	33	30	30	41	50	45	59	60	42	37	25	20
1898	26	37	30	40	46	49	57	63	54	44	34	30
1899	32	25	35	43	49	52	65	62	60	42	39	33
Absolute minimum and year	12 1888	20 [a]1883	23 [a]1882	32 1883	36 1880	34 1890	54 [b]1879	48 1893	38 1887	32 [c]1882	25 1897	18 1879

[a] Also 1884. [b] Several years. [c] Also 1886.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1871	47.2	45.4	52.0	58.8	61.0	74.5	77.9	79.2	77.4	64.8	50.9	48.0	61.4
1872	45.1	48.6	51.4	58.1	63.5	69.5	75.5	75.3	69.1	63.4	51.3	45.4	59.7
1873	48.5	42.3	53.7	54.6	63.1	70.5	80.2	75.2	74.9	61.1	56.8	43.8	60.4
1874	42.4	45.9	47.2	56.3	63.3	71.5	79.6	74.0	72.9	61.7	51.3	44.5	59.2
1875	46.4	49.9	50.4	63.0	67.2	72.5	80.5	77.5	73.2	69.7	53.3	46.8	62.5
1876	44.2	49.3	51.3	57.9	65.4	77.1	75.8	73.7	70.5	62.6	53.9	49.7	61.0
1877	49.4	53.9	57.4	57.6	61.5	74.5	78.6	75.2	71.9	60.7	52.4	47.8	61.7
1878	48.2	49.1	53.2	56.4	63.0	72.6	74.9	75.1	68.5	62.7	54.1	46.1	60.3
1879	43.0	52.0	53.9	57.2	57.9	69.8	73.9	77.1	70.6	60.4	50.6	43.5	59.2
1880	43.1	44.7	45.8	51.8	60.3	68.2	76.3	72.1	71.3	62.7	47.8	47.9	57.7
1881	46.0	50.1	53.4	59.4	64.3	66.8	73.5	71.4	70.8	56.0	48.2	44.4	58.7
1882	39.8	40.1	48.2	51.0	61.7	66.7	77.5	79.0	68.6	55.3	52.5	46.6	57.2
1883	38.1	48.4	53.3	50.6	59.0	73.5	78.2	75.2	72.0	55.7	50.0	45.0	58.2
1884	45.3	43.8	48.7	51.9	62.1	63.5	72.0	76.6	64.2	58.7	53.6	45.3	57.1
1885	44.6	51.3	56.3	56.9	64.6	66.3	73.8	78.1	72.3	64.5	52.5	46.8	60.7
1886	44.0	51.9	47.8	53.4	61.5	72.4	76.7	77.5	70.5	55.2	47.9	48.1	58.9
1887	44.9	39.8	54.5	55.4	63.1	71.3	76.0	72.5	71.0	67.1	53.4	44.8	59.5
1888	40.4	50.9	51.3	61.4	61.0	66.9	76.5	76.4	76.9	64.2	52.9	47.1	60.5
1889	44.6	49.7	55.6	59.3	63.8	80.1	76.5	76.4	71.9	61.7	54.4	47.0	61.8
1890	40.8	44.0	48.7	58.6	63.6	68.5	75.4	75.1	72.2	63.3	57.3	47.1	59.6
1891	48.0	46.4	52.2	55.0	61.2	67.8	79.3	79.6	70.1	66.4	57.8	44.6	60.7
1892	50.2	52.2	55.2	56.7	64.4	68.7	75.6	76.6	71.6	64.5	58.0	51.5	62.1
1893	50.6	51.9	54.0	55.6	64.1	71.0	78.3	76.6	68.1	61.5	57.0	53.7	61.9
1894	46.5	47.8	51.7	61.6	64.3	66.2	80.5	81.9	73.9	64.7	61.2	51.3	62.6
1895	46.5	51 6	52.9	56.9	62.9	76.2	75.6	77.3	66.5	64.2	57.2	47.4	61.3
1896	53.0	52.1	54.0	51.9	60.4	70.6	80.4	72.7	68.1	65.1	51.3	54.4	61.2
1897	49.7	45.2	44.9	61.6	68.3	70.3	77.6	77.5	67.8	59.4	44.1	42.6	59.1
1898	41.4	49.5	45.8	59.1	57.6	68.1	74.1	75.8	69.2	55.4	52.8	45.0	57.8
1899	47.8	48.7	51.0	57.2	59.9	74.1	73.1	71.9	76.3	60.3	50.4	45.4	59.7
Mean (29 years)	45.5	48.1	51.6	56.5	62.6	70.7	76.7	75.9	71.1	64.6	55.0	47.0	60.1

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

1871	7.21	2.36	1.85	3.57	2.06	0.00	0.00	0.00	0.00	0.54	2.80	13.55	33.94
1872	6.80	9.35	3.59	2.50	0.65	0.20	0.00	0.00	0.00	0.38	3.13	8.43	35.03
1873	3.74	7.44	0.53	1.22	0.32	0.00	0.00	0.00	0.00	0.34	1.25	11.97	26.81
1874	7.46	4.14	6.26	2.56	0.57	0.00	0.00	0.00	0.00	1.57	9.64	0.82	33.02
1875	10.00	0.44	2.73	0.10	0.61	1.82	0.00	0.00	0.00	0.85	11.39	6.05	33.99
1876	7.56	5.62	10.10	1.97	0.61	0.00	0.41	0.21	0.00	4.52	0.65	0.00	31.65
1877	6.94	1.47	2.14	0.72	1.53	0.27	0.00	0.00	0.00	0.99	2.46	1.55	18.07
1878	10.61	10.19	7.60	1.73	0.98	0.00	0.00	0.00	0.50	0.89	1.53	0.91	34.94
1879	6.34	7.16	8.78	5.94	2.43	0.46	0.00	0.00	0.00	2.33	3.82	7.88	45.14
1880	3.13	4.90	2.62	13.02	3.85	0.00	0.00	0.00	0.00	0.00	0.25	13.91	41.68
1881	9.61	8.20	2.43	1.38	0.00	1.40	0.00	0.00	0.92	2.72	3.01	5.87	35.54
1882	4.60	4.99	6.05	4.63	0.53	0.28	0.00	0.00	0.84	5.19	4.08	1.65	32.84
1883	2.86	1.06	5.19	0.70	4.07	0.00	0.00	0.00	1.70	2.51	1.00	2.52	21.61
1884	5.33	7.63	10.17	8.02	0.85	1.23	0.00	0.00	0.56	2.25	0.00	16.37	52.41
1885	1.74	1.27	0.57	2.10	0.00	0.70	0.00	0.00	0.64	0.00	15.24	4.05	26.31
1886	8.25	0.00	4.10	9.39	0.65	0.00	0.00	0.00	0.00	0.89	1.26	4.88	29.41
1887	2.04	12.38	1.50	4.34	0.30	0.00	0.00	T.	1.09	0.00	1.22	4.90	27.77
1888	7.07	1.40	3.25	0.80	0.40	1.55	0.00	0.00	0.30	0.00	4.20	5.82	24.79
1889	0.33	0.52	9.57	1.36	4.65	0.00	0.00	0.00	0.00	5.75	4.85	11.94	38.97
1890	8.97	3.96	8.08	2.83	2.30	0.00	0.00	0.00	2.63	0.14	0.00	5.13	34.04
1891	0.88	6.80	5.40	2.23	0.58	0.69	0.00	0.00	0.00	1.33	0.95	7.36	26.52
1892	4.00	4.91	5.96	3.11	4.55	0.00	0.00	0.00	0.15	1.76	6.13	8.99	39.56
1893	5.33	4.74	9.20	3.71	0.78	0.00	0.00	0.00	0.70	1.11	5.32	3.88	34.77
1894	6.96	9.89	1.95	1.35	2.77	1.38	T.	T.	0.67	3.87	1.09	13.56	43.49
1895	12.74	4.14	3.09	3.38	1.88	0.00	T.	0.13	2.04	0.12	1.04	3.39	31.95
1896	11.88	0.49	6.21	7.66	2.42	0.40	0.14	0.25	0.90	1.09	10.34	2.98	44.76
1897	2.78	11.40	8.05	1.51	0.28	0.17	0.00	T.	0.20	2.83	2.22	3.50	32.94
1898	1.13	6.44	0.32	0.49	2.26	0.97	T.	0.00	0.26	1.75	3.59	2.75	19.96
1899	4.78	0.17	13.25	0.51	1.28	1.43	0.00	0.08	0.00	5.94	9.00	5.47	41.86
Average (29 years)	5.90	4.95	5.19	3.20	1.53	0.45	0.02	0.02	0.49	1.78	3.84	6.21	33.58

BERKELEY.

By Dr. ARMIN O. LEUSCHNER, Director of Students' Observatory.

SYNOPSIS OF METEOROLOGICAL OBSERVATIONS AT BERKELEY FOR THE YEARS ENDING JUNE 30, 1898, JUNE 30, 1899, AND JUNE 30, 1900, IN COMPARISON WITH THE TEN-YEAR SYNOPSIS, JUNE 30, 1887, TO JUNE 30, 1897.

In 1898 a ten-year synopsis of the meteorological observations taken at the Students' Observatory from 1887, July 1, to 1897, June 30, was compiled by Mr. R. Tracy Crawford, under direction of Dr. Leuschner and published in the University Chronicle, Vol. I. The ten-year synopsis is now being supplemented by a synopsis of the meteorological observations at Berkeley for the years ending June 30, 1898, June 30, 1899, and June 30, 1900, compiled by Mr. Y. Kuno.

To facilitate comparison of the annual means, etc., for these three years with the ten-year synopsis the corresponding figures of the ten-year synopsis are printed in the last column.

ATMOSPHERIC PRESSURE.

	Year ending June 30, 1898.		Year ending June 30, 1899.		Year ending June 30, 1900.		Ten years ending June 30, 1897.	
	Date.	Barometer reading.	Date.	Barometer reading.	Date.	Barometer reading.	Date.	Barometer reading.
		Inches.		*Inches.*		*Inches.*		*Inches.*
Mean		30.049		30.051		30.028		30.027
Highest	December 25, 8 a. m.	30.486	December 24, 8 a. m.	30.634	December 20, 8 a. m.	30.511	December 30, 8 a. m., 1895.	30.533
Lowest	April 29, 8 p. m.	29.565	January 10, 8 a. m.	29.436	October 10, 8 a. m.	29.627	February 22, 8 p. m., 1891.	29.196
Annual range		0.921		1.198		0.884		0.970
Highest daily average	December 24, 28	30.385	December 24	30.594	December 20	30.474	December 6, 1891.. December 30, 1895.	30.499
Lowest daily average	April 29	29.602	January 10	29.526	October 10	29.633	February 22, 1891	29.296
Greatest monthly mean	December	30.211	December	30.220	February	30.142	December, 1895	30.229
Least monthly mean	June	29.944	August	29.913	July	29.952	August, 1887	29.908
Greatest monthly range	March	0.782	January	0.969	December	0.726	February, 1891	1.229
Least monthly range	August	0.293	September	0.225	August	0.246	August, 1887	0.240

TEMPERATURE.

	Year ending June 30, 1898.		Year ending June 30, 1899.		Year ending June 30, 1900.		Ten years ending June 30, 1897.	
	Date.	Thermometer reading.	Date.	Thermometer reading.	Date.	Thermometer reading.	Date.	Thermometer reading.
		°F.		°F.		°F.		°F.
Mean		53.3		53.5		54.1		54.4
Mean temperature of the warmest day.	June 30	75.5	July 1	72.8	October 8	76.5	June 29, 1891	77.0
Mean temperature of the coldest day.	January 10	36.7	February 4	32.8	December 28	38.5	January 14, 1888	30.9
Maximum temperature	June 4	90.8	July 1	94.4	October 8	94.0	June 29, 1891	101.0
Minimum temperature	January 10	32.9	February 4	29.9	December 28	34.5	January 14, 1888	24.9
Annual range		57.9		64.5		59.5		58.9
Greatest daily variation	June 30	37.4	July 1	31.2	May 11	33.2	June 20, 1892	38.1
Least daily variation	March 2	3.5	March 23	2.3	January 1	2.5	February 19, 1892	1.5
Highest monthly mean	June	60.8	September	58.5	June	59.8	August, 1891	62.9
Lowest monthly mean	January	43.3	December	46.3	December	46.6	January, 1890	40.6
Greatest monthly range	April	44.4	February	49.6	October	49.0	June, 1891	55.1
Lowest monthly range	August	23.3	August	26.7	January	20.8	January, 1897	19.3

PRECIPITATION.

	Year ending June 30, 1898.		Year ending June 30, 1899.		Year ending June 30, 1900.		Ten years ending June 30, 1897.	
	Date.	Amount.	Date.	Amount.	Date.	Amount.	Date.	Amount.
		Inches.		*Inches.*		*Inches.*		*Inches.*
Rainfall		14.408		27.662		25.359		28.573
Maximum rainfall during twenty-four hours.	December 7	2.221	March 22	3.198	October 20-21	3.198	February 15, 1891	4.160
Maximum rainfall for one month.	February	8.279	March	13.192	November	5.864	December, 1894.	12.634

RELATIVE HUMIDITY.

	Year ending June 30, 1898.		Year ending June 30, 1899.		Year ending June 30, 1900.		Ten years ending June 30, 1897.	
	Date.	Per cent.	Date.	Per cent.	Date.	Per cent.	Date.	Per cent.
Mean relative humidity		84.29		85.4		87.1		82.9
Maximum humidity	June 30, 8 p. m	100.0	(a)	100.0	July 13, 8 a. m.; January 3, 10, 8 a. m.	100.0	January 14, 7 a. m., 1888. January 15, 9 p. m., 1888. March 12, 9 p. m., 1889.	100.0
Minimum humidity	October 26, 8 p. m.	48.0	October 20, 8 a. m.	54.8	October 8, 8 a. m.	51.0	October 28, 2 p. m., 1890.	27.8
Annual range		52.0		45.2		49.0		62.0
Greatest daily variation	March 10, 22	39.0	October 16	37.3	February 5	38.5	September 24, 1891	60.2
Highest monthly mean	February	87.9	July	91.5	January	91.0	January, 1895	89.5
Lowest monthly mean	January	80.35	February	79.5	October	83.1	January, 1892	68.1
Highest monthly range	October	46.0	do	44.0	do	46.0	October, 1890	69.7
Lowest monthly range	February	20.0	August	20.5	March	17.0	September, 1896	20.0

a July 7, 9, 8 p. m.; August 1, 8 p. m.; September 1, 16, 19, 21, 8 p. m.; February 3, 8 a. m.

WEATHER IN GENERAL.

	Number of—			Total.	Foggy days.	Days on which rain fell.	Description of prevailing wind.
	Clear days.	Fair days.	Cloudy days.				
Year ending June 30, 1898	171	87	107	365	48	52	South and calm.
Year ending June 30, 1899	124	136	105	365	49	61	Do.
Year ending June 30, 1900	88	126	151	365	52	88	Do.
Ten years ending June 30, 1897	175	67	123	365	66	70	Southwest.

For Rainfall tables see page 168.

BOCA.

[Data from records of Southern Pacific Railway Company.]

Boca is situated at the junction of the Truckee and Little Truckee rivers, in latitude 39° 25′ north, longitude 120° 5′ west, and has an elevation of 5,535 feet; within a short distance are elevations of from 7,000 to 8,000 feet. It is in Nevada County, on the eastern slope of the Sierra Nevada Mountains, and has essentially a mountain climate. The general movement of the air is from the north, although southwest winds blowing down the valley of the Truckee River are frequent. Killing frosts occur late in spring and early in autumn. The mean annual temperature, based upon records covering a period of thirty years, is 43.8°. The coldest month is January, with a mean temperature of 25.9°. December and February are also very cold months. The warmest month is July, with a mean temperature of 62.7°. The minimum temperatures for the last four years are as follows: Zero January 9, 1897; 12° below zero December 30, 1898; 30° below zero February 6, 1899, and zero December 31, 1900. The mean annual precipitation for thirty-one years is 20.14 inches. The month of heaviest precipitation is January, with an average of 4.30 inches. The snowfall for the past four years is as follows: 1897, 193 inches; 1898, 86 inches; 1899, 224 inches; 1900, 158 inches.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1871	29.1	30.8	39.1	42.7	52.4	61.9	70.3	68.4	58.4	48.7	35.4	33.2	49.2
1872	32.1	37.7	39.5	41.1	56.9	67.4	65.7	67.7	52.5	48.5	35.4	32.2	48.1
1873	36.0	28.9	31.3	40.4	48.9	52.0	66.9	61.3	58.1	45.3	44.6	26.8	45.0
1874	23.3	23.8	29.2	42.5	48.4	57.5	68.7	60.4	54.8	47.5	40.4	33.3	44.2
1875	30.3	30.8	36.9	43.6	57.8	54.5	65.2	64.2	48.4	50.4	35.4	35.4	46.1
1876	19.4	25.3	32.6	38.2	48.2	63.2	63.0	60.9	57.6	50.8	37.2	21.0	43.1
1877	27.9	33.1	43.0	43.2	47.8	63.2	63.5	62.1	59.1	44.3	38.8	31.1	46.4
1878	30.8	30.3	35.5	42.7	47.6	58.0	56.9	62.7	54.4	44.5	39.2	28.1	44.4
1879	20.8	33.9	38.2	43.6	44.3	57.8	61.3	62.3	57.9	42.9	34.6	24.5	43.5
1880	18.8	18.3	24.0	38.2	45.7	56.3	63.9	58.5	52.8	44.4	31.2	31.4	40.3
1881	29.1	33.9	38.3	48.7	48.6	57.2	62.9	52.4	59.3	41.5	22.7	23.9	43.2
1882	31.5	18.1	25.7	34.4	47.3	56.4	64.2	60.6	55.1	58.2	31.6	31.3	42.9
1883	22.4	18.7	40.9	51.0	47.3	56.3	60.2	56.8	53.6	41.0	32.4	29.4	42.5
1884	22.6	18.7	30.0	37.4	49.0	56.2	60.7	64.6	51.1	46.0	35.8	31.6	42.0
1885	30.2	38.8	46.9	44.6	52.4	53.5	62.9	64.2	58.7	49.9	40.5	33.1	48.0
1886	30.0	38.1	36.6	46.5	52.5	57.5	62.7	62.7	54.8	45.0	28.4	34.1	45.7
1887	27.4	21.4	34.3	42.9	51.8	56.4	64.9	63.5	55.9	49.6	33.5	22.4	43.7
1888	15.8	27.6	33.4	42.5	53.4	58.4	67.9	63.6	60.4	43.5	33.5	31.2	44.3
1889	26.1	31.3	33.6	43.2	48.6	63.9	63.9	61.9	56.8	43.5	41.7	28.8	45.7
1890	19.2	27.2	33.4	43.0	52.5	53.9	63.6	62.1	63.6	48.9	43.8	26.9	44.8
1891	25.0	28.0	34.3	41.4	50.0	56.5	66.5	63.7	54.2	48.1	40.6	20.6	44.0
1892	20.5	22.2	33.1	37.1	45.3	57.1	58.9	61.1	51.3	41.0	29.7	22.2	39.9
1893	27.4	24.4	28.6	34.5	47.1	56.1	59.9	61.5	52.5	47.9	40.0	32.1	42.7
1894	26.5	28.6	33.2	41.3	50.5	54.5	55.4	56.7	52.1	45.8	44.5	29.1	43.2
1895	26.1	29.3	32.2	38.8	52.7	57.4	60.1	57.9	51.6	48.2	38.7	31.2	43.7
1896	32.6	37.1	36.7	36.6	43.7	59.1	63.2	57.7	53.0	47.3	37.6	33.5	44.8
1897	27.8	21.8	24.1	40.9	53.7	55.3	59.3	59.5	49.2	41.3	33.4	24.4	40.9
1898	18.4	32.2	28.4	43.5	45.9	54.5	61.0	63.1	50.5	38.2	28.7	21.6	40.5
1899	25.5	26.6	31.4	37.2	40.6	54.6	56.7	50.8	51.5	37.0	36.1	23.7	39.3
1900	25.3	32.4	34.7	36.0	48.2	56.1	59.9	52.4	44.5	39.9	37.3	29.4	41.3
Mean (30 years)	25.9	28.3	34.0	41.4	49.3	57.4	62.7	60.8	55.1	45.6	36.1	28.6	43.8

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

1870	4.31	3.85	1.82	0.81	0.55	0.14	0.12	0.00	0.00	0.52	0.04	1.10	13.26
1871	2.50	2.32	1.60	0.45	0.00	0.10	2.00	0.00	0.00	0.00	0.60	7.30	16.87
1872	3.00	0.90	0.10	1.50	0.10	0.00	0.00	0.00	0.00	0.00	0.20	2.60	8.40
1873	1.80	4.10	0.10	0.10	0.75	0.00	0.00	0.00	0.00	0.00	0.00	4.30	11.15
1874	4.70	2.40	6.20	0.80	0.60	0.00	0.60	0.00	0.10	2.15	3.70	0.60	21.85
1875	6.30	0.00	0.65	0.60	0.00	0.40	T.	0.00	0.00	T.	1.06	1.65	10.66
1876	8.10	3.60	4.72	0.70	0.10	0.00	0.22	0.01	0.01	0.25	0.02	0.00	17.73
1877	5.22	0.00	0.46	0.95	0.36	0.10	0.00	0.00	0.00	0.00	1.50	0.30	8.89
1878	3.94	6.74	0.86	1.30	0.00	0.13	0.08	0.00	0.17	0.99	1.60	0.00	15.81
1879	5.47	2.92	4.80	2.08	0.45	0.00	0.00	0.00	0.00	0.20	0.98	4.18	21.08
1880	3.00	3.00	2.90	6.95	0.75	0.00	0.00	0.00	0.00	0.00	0.00	3.68	20.28
1881	4.31	3.75	2.90	1.48	0.00	0.00	0.00	0.00	0.00	0.10	1.20	1.00	14.74
1882	3.90	3.60	10.20	1.00	0.00	0.00	0.00	0.00	0.00	0.80	0.90	0.60	21.00
1883	1.15	2.20	1.70	0.90	1.80	0.00	0.00	0.00	0.00	2.45	0.50	0.60	11.30
1884	4.60	6.30	5.10	1.90	0.30	1.40	0.00	0.00	T.	0.80	0.00	8.20	28.60
1885	1.00	0.10	0.10	1.50	0.00	0.30	0.00	0.00	0.00	0.00	2.40	2.98	8.38
1886	8.35	0.85	4.40	1.30	0.50	0.00	1.00	0.00	0.10	0.70	0.70	0.70	18.60
1887	2.40	12.70	0.00	1.80	T.	0.00	0.00	T.	0.00	0.00	0.30	2.70	19.90
1888	3.75	1.00	2.40	0.10	0.51	0.10	0.15	0.30	0.12	0.00	0.95	1.45	10.83
1889	1.05	0.60	1.15	0.10	3.90	0.00	0.00	0.00	0.00	1.50	4.55	19.35	32.20
1890	14.60	5.40	5.45	0.60	0.70	0.00	0.00	0.00	0.00	0.70	0.00	3.65	31.10
1891	1.25	11.80	2.50	1.70	1.40	0.25	0.05	0.00	0.60	0.00	0.25	8.30	28.10
1892	0.70	3.35	1.70	2.70	3.10	0.70	0.00	0.00	0.00	1.50	8.35	6.95	29.05
1893	4.55	8.90	4.00	1.90	1.35	0.00	0.00	0.05	0.55	0.25	2.42	3.70	27.67
1894	5.10	7.55	0.75	1.00	0.33	T.	0.00	T.	T.	0.61	0.50	11.80	27.64
1895	8.36	1.20	0.45	0.70	0.90	T.	0.00	T.	0.97	0.11	0.71	3.07	16.47
1896	7.75	0.50	6.30	6.65	3.10	0.25	1.15	0.18	0.35	0.00	2.47	1.80	30.50
1897	2.20	6.35	8.35	0.10	0.50	0.40	0.00	0.50	T.	2.10	2.80	2.72	26.02
1898	1.55	2.90	2.50	1.30	0.85	1.00	0.00	0.00	0.01	1.28	1.84	1.58	14.81
1899	6.80	1.85	7.95	0.85	2.40	0.10	0.00	0.98	0.00	4.42	2.59	4.53	32.47
1900	1.57	0.60	3.52	4.27	1.10	2.67	T.	1.22	0.66	3.04	5.73	4.58	28.96
Average (31 years)	4.30	3.59	3.08	1.55	0.85	0.26	0.17	0.10	0.12	0.79	1.58	3.74	20.14

CHICO.

Chico is situated about 5 miles east of the Sacramento River, in the northern central portion of the valley, latitude 39° 43′, longitude 121° 51′. The lower foothills of the Sierra Nevada Mountains lie close to the east. While the elevation of Chico itself is but 193 feet, 10 miles east the contours approximate 1,000 feet, and 20 miles east elevations of several thousand feet are reached. The Sierra Nevada Mountains are not quite as abrupt and lofty here as elsewhere in the range. The general drainage of the air is down the main axis of the valley, that is, from the northwest; but there must also be a considerable movement of air from the northeast and east, backward over the mountains, with the passage of certain high areas eastward.

The mean annual temperature, based upon records extending over a period of thirty years, is 63.8°. The coldest month is January, with a mean temperature of 46.7°, and the warmest is July, 83.9°.

The highest temperature recorded within this period of thirty years was 117°. Temperatures exceeding 100° are not infrequent during June, July, and August. The lowest temperature was 18°, or an absolute range of 99°. The lowest temperature recorded in April was 36°, and in May 40°. The first killing frost in autumn last year (1899) occurred on December 12 and the last killing frost in spring on March 30.

The mean annual rainfall for twenty-nine years is 22.44 inches. More than half of this amount falls in the three months of December, January, and February. July is practically a rainless month, as only thrice in twenty-nine years has rain fallen to an appreciable extent. The rainfall is well distributed for agricultural purposes. During twelve of the twenty-nine years the total annual rainfall has not equaled 20 inches, but only twice has the rainfall not exceeded 15 inches. The driest year was that of 1898, when but 12.31 inches fell. The year of greatest rainfall was 1892, when over 36 inches fell.

MAXIMUM TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1878	65	65	78	82	.....	105	105	111	98	90	73	68
1879	62	74	82	84	95	104	106	108	105	92	78	62
1880	64	65	76	86	92	96	106	102	102	92	75	68
1881	.....	74	87	92	94	108	106	102	106	86	78	62
1882	58	60	86	94	105	106	112	110	102	84	68	68
1883	.....	80	84	84	100	108	110	108	107	88	75	63
1884	60	78	76	85	85	97	105	111	95	78	75	74
1885	68	75	86	96	104	100	107	115	105	103	75	68
1886	66	80	76	89	100	106	114	109	105	90	84	76
1887	69	70	80	87	107	113	114	110	105	95	80	62
1888	62	80	80	95	98	100	110	111	109	90	73	64
1889	66	78	80	86	104	106	114	115	103	98	75	60
1890	59	66	72	86	98	104	111	104	92	92	88	70
1891	72	68	78	90	98	114	117	116	99	91	78	68
1892	70	76	84	84	98	104	105	110	98	95	88	72
1893	68	72	78	80	92	96	105	108	98	90	83	78
1894	64	70	78	88	92	102	105	110	106	96	90	66
1895	66	78	80	92	98	108	108	110	98	94	80	68
1896	64	75	78	78	94	100	108	104	105	94	76	67
1897	62	74	75	92	98	109	108	112	100	85	78	69
1898	66	76	78	97	98	104	114	112	100	90	85	70
1899	78	84	77	90	92	107	107	103	105	102	76	73
Absolute maximum and year	78 1899	84 1899	87 1881	97 1898	107 1887	114 1891	117 1891	116 1891	109 1888	103 1885	90 1894	78 1893

MINIMUM TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1878	28	38	39	38	.....	64	58	60	52	42	34	24
1879	28	30	43	48	46	56	60	62	60	48	34	26
1880	25	28	34	42	46	60	68	62	60	52	22	40
1881	.....	46	42	54	56	66	62	68	56	36	28	32
1882	30	30	36	46	50	60	70	70	54	54	28	34
1883	.....	26	46	47	46	60	74	70	62	40	30	30
1884	30	20	34	48	56	54	67	65	50	48	35	25
1885	35	35	45	48	50	58	65	64	58	46	39	33
1886	29	40	38	44	50	66	68	69	55	37	33	33
1887	30	28	40	48	50	52	75	52	54	45	30	32
1888	18	35	40	45	55	60	65	67	60	45	37	35
1889	31	27	45	48	48	60	65	65	53	50	40	32
1890	28	28	36	46	50	53	60	60	56	47	40	33
1891	31	30	38	44	53	50	60	65	58	55	38	20
1892	32	32	32	38	42	50	56	58	53	38	32	32
1893	32	30	34	36	42	52	60	58	45	40	32	30
1894	24	28	28	36	42	48	62	60	46	42	33	31
1895	33	36	40	40	54	55	64	58	50	42	30	28
1896	29	32	30	36	40	52	58	58	52	44	26	35
1897	35	30	33	41	53	58	65	58	55	42	34	28
1898	25	36	32	45	52	55	65	64	55	45	35	28
1899	30	25	35	45	45	57	60	59	58	44	45	34
Absolute minimum and year	18	20	28	36	40	48	56	52	45	36	22	20
	1888	1884	1894	[a]1893	1896	1894	1892	1887	1893	1881	1880	1891

[a] Also 1894 and 1896.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1870	47.8	50.9	51.3	60.1	67.4	76.3	85.8	81.6	71.7	62.6	53.8	44.6	62.8
1871	47.9	47.7	54.9	59.4	65.2	79.2	82.3	82.9	72.3	61.5	51.6	47.4	62.7
1872	46.9	51.9	55.6	59.1	71.3	77.0	89.1	77.7	73.1	63.5	50.4	46.5	63.5
1873	50.1	46.2	57.5	60.2	69.9	77.2	84.2	75.3	75.5	61.8	52.8	38.8	62.5
1874	43.2	45.9	50.0	58.7	66.6	73.9	80.3	74.9	71.4	60.7	51.1	42.9	60.0
1875	42.5	48.4	52.5	66.3	71.1	72.3	81.8	83.6	76.8	71.4	45.6	48.4	63.4
1876	44.9	48.4	52.6	61.8	65.7	79.9	74.5	73.6	75.1	70.8	55.6	47.8	62.6
1877	50.2	53.7	60.5	60.8	67.1	79.5	82.8	80.2	75.1	63.6	52.6	42.3	64.0
1878	49.6	51.3	57.6	65.6	70.8	83.3	85.4	85.8	74.3	66.1	56.0	46.0	66.0
1879	45.0	54.4	58.7	62.9	61.5	78.5	80.3	83.5	78.5	64.1	51.6	44.3	63.6
1880	44.6	45.4	54.0	57.6	65.7	75.7	85.2	80.8	78.9	76.1	48.1	49.5	63.5
1881	49.6	56.3	59.0	69.3	73.9	78.5	87.6	82.6	78.2	57.3	58.2	46.6	66.4
1882	43.0	45.1	56.8	61.2	68.8	79.5	85.5	85.8	76.6	64.9	46.4	50.8	63.7
1883	46.5	49.7	60.8	60.4	68.4	87.5	91.1	86.7	79.2	61.3	51.1	45.5	65.7
1884	46.6	44.4	53.8	60.7	71.2	70.2	84.1	86.7	69.1	58.4	57.5	50.6	62.8
1885	49.4	54.5	68.9	65.1	73.9	76.5	84.4	88.3	76.1	70.8	54.9	51.4	67.4
1886	48.5	57.1	54.7	60.2	70.5	84.0	89.0	85.1	77.9	62.5	52.9	52.6	66.2
1887	50.5	45.0	60.0	65.0	72.7	80.6	88.3	80.1	77.7	70.5	55.0	48.5	66.2
1888	42.6	54.9	56.4	70.9	71.6	75.1	86.0	82.1	83.0	67.2	54.7	51.4	66.3
1889	45.3	51.4	58.9	64.2	69.7	82.6	85.2	85.1	77.9	64.2	54.7	48.1	65.6
1890	42.1	46.3	51.5	61.3	68.7	71.3	80.4	79.5	70.9	63.7	57.2	45.5	61.5
1891	50.0	48.5	55.1	60.9	67.9	77.5	87.5	85.6	75.4	71.1	57.8	43.9	65.1
1892	47.1	49.6	53.2	56.2	64.6	70.9	77.1	76.7	72.8	65.8	58.5	52.5	62.1
1893	45.8	49.3	49.6	53.4	64.8	71.0	77.1	78.5	64.7	59.3	52.8	48.8	59.6
1894	44.8	46.2	52.7	60.1	63.9	63.2	81.3	79.5	71.3	64.0	58.5	48.6	61.2
1895	48.8	55.6	57.0	62.2	68.4	80.4	81.4	82.8	68.8	65.6	52.2	45.3	64.0
1896	49.3	53.1	55.0	53.4	62.2	77.6	84.9	78.6	71.6	65.4	52.7	52.0	63.0
1897	47.3	50.4	52.0	65.2	74.8	77.7	85.1	83.5	73.2	61.6	55.7	48.4	64.5
1898	42.4	53.2	54.0	64.7	65.6	77.1	85.2	85.3	75.0	65.5	53.6	46.0	64.0
1899	49.6	52.6	53.4	63.2	65.6	78.2	84.6	73.2	76.8	63.3	57.8	48.0	63.9
1900	51.0	53.2	59.9	59.4	69.3	78.7	82.6	79.2	72.6	59.9	57.0	47.9	64.2
Mean (31 years)	46.9	50.3	55.6	61.6	68.4	77.1	83.9	81.5	74.6	64.6	53.8	47.5	63.8

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1871	2.36	3.53	1.17	2.13	1.12	0.00	0.00	0.00	0.00	0.09	2.07	10.11	22.58
1872	7.94	8.12	1.02	1.64	0.00	0.33	0.00	0.05	0.00	0.20	2.11	5.07	26.48
1873	2.51	2.04	1.50	1.08	0.08	0.00	0.00	0.00	0.00	0.65	2.16	9.36	19.38
1874	5.16	2.94	2.21	1.90	0.92	0.00	0.00	0.00	0.00	4.60	5.96	0.65	24.34
1875	4.77	0.38	0.86	T.	0.18	1.36	0.00	0.00	0.00	0.57	5.08	2.21	15.41
1876	4.76	7.49	4.59	0.00	T.	T.	0.50	0.00	0.14	4.03	0.35	0.00	21.86
1877	5.70	2.04	2.64	0.31	0.33	0.28	0.00	0.00	0.00	1.44	2.49	2.31	17.54
1878	12.04	10.01	4.49	1.52	0.42	0.00	0.00	T.	0.54	0.96	1.11	0.27	31.36
1879	8.70	4.93	3.62	2.17	2.05	0.12	T.	0.20	0.00	0.42	3.08	4.76	25.05
1880	1.14	0.95	0.47	5.78	0.75	0.00	0.00	0.00	0.00	0.00	0.00	8.29	17.38
1881	4.36	3.94	1.03	0.00	0.00	0.00	0.00	0.00	1.13	0.00	1.55	2.55	14.56
1882	1.61	4.54	4.54	1.01	0.00	0.00	0.00	0.00	1.13	1.76	2.26	0.84	17.69
1883	0.67	0.27	3.61	1.65	5.01	0.00	0.00	0.00	0.65	3.78	0.86	0.50	17.00
1884	2.48	2.16	5.57	2.93	0.40	2.11	0.00	0.00	0.86	1.40	0.00	5.28	23.19
1885	2.26	1.01	0.30	0.75	0.53	0.58	0.00	0.00	0.30	0.27	3.99	5.42	20.41
1886	4.44	0.75	2.29	4.17	0.36	0.00	0.00	0.00	0.00	0.97	0.15	2.78	15.91
1887	0.68	6.53	1.38	2.31	0.00	0.96	0.00	0.00	0.00	0.00	1.05	2.53	15.44
1888	4.95	1.15	1.94	0.15	0.00	1.20	0.00	0.01	0.68	0.00	4.49	5.35	19.92
1889	0.34	0.50	5.68	0.97	1.78	0.42	0.00	0.00	0.00	7.80	2.59	9.74	29.82
1890	5.26	2.51	5.65	1.97	1.87	0.00	0.00	0.00	1.28	0.00	0.00	3.24	21.78
1891	1.36	8.76	1.23	1.78	0.20	0.96	0.15	0.00	0.16	0.34	0.46	4.39	19.79
1892	5.02	3.28	4.58	3.81	3.24	0.00	0.00	0.00	0.00	0.92	6.31	9.08	36.24
1893	5.54	4.14	5.46	1.63	1.34	0.00	0.00	0.00	0.67	0.00	3.53	3.18	25.49
1894	7.19	2.52	1.68	0.00	1.80	0.97	0.00	0.00	2.00	2.64	0.78	11.08	30.61
1895	11.77	2.58	2.67	3.25	0.51	0.00	0.47	0.00	3.15	0.00	1.17	1.78	27.35
1896	10.08	0.21	2.99	5.88	1.60	0.00	0.00	0.41	0.76	0.52	5.52	5.81	33.78
1897	3.89	5.94	1.44	1.36	0.18	0.61	0.00	0.00	0.10	3.26	1.58	2.38	20.74
1898	0.85	5.30	0.19	0.47	1.63	0.00	0.00	0.00	0.40	0.40	1.26	1.81	12.31
1899	7.17	0.00	4.21	0.52	0.81	2.27	0.00	0.12	0.00	2.95	5.05	4.20	27.30
1900	3.79	0.95	2.00	2.47	1.64	0.55	0.00	0.00	T.	2.22	4.75	1.77	20.14
Average (30 years)	4.46	3.32	2.70	1.79	0.96	0.42	0.04	0.03	0.47	1.41	2.56	4.22	22.36

CORONADO.

By Mr. Ford A. Carpenter, Observer, Weather Bureau.

Coronado is practically an island; only a long and a very narrow strip of land connects it with the mainland. San Diego Bay may be likened to an inverted J lying northwest and southeast. Coronado lies snugly within the curve of the J and has a southern exposure. It is therefore readily seen that the climate of Coronado is substantially that of San Diego. The differences are slight and have only been determined by comparison of the records of self-registering instruments.

Regular meteorological observations have been made at Coronado since the erection of the Hotel del Coronado in February, 1888, but it has only been a little over a year since a set of recording instruments has been installed. The instruments now used comprise a Richards barograph located in the hotel lobby (elevation 30 feet above sea level), one Richards thermograph and other recording thermometers exposed in a standard instrument shelter on the northwest lawn, 75 feet away from any building, tree, etc., and 20 feet above sea level. The rain gage is located on the lawn near the instrument shelter. The photographic sunshine recorder is mounted on the east tower of the hotel. Such is the instrumental equipment of Coronado as installed by the San Diego office of the United States Weather Bureau.

The region in which Coronado is situated lies too far south to be affected very much by the areas of low pressure that enter the Pacific coast near Vancouver. Probably four-fifths of the northern storm areas of winter are too distant to cause any fluctuations of the barometer. This is also true of the summer storms of the southwest. Areas of high barometer are almost as persistent during the winter months as areas of low pressure during the summer. The highs are responsible for the relative warm, dry, and clear winter weather, and the lows for damp, cool, and cloudy summer months.

AVERAGE AND EXTREME DATA FOR A PERIOD OF THIRTEEN YEARS.

[Record began February 1, 1888.]

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	For the year.
Temperature:													
Average	55	57	58	60	63	64	66	69	68	65	60	56	61.7
Average daily range	17	16	14	14	12	10	11	12	12	14	17	16	13.8
Mean maximum	63	64	65	67	69	70	72	73	74	71	69	65	68.5
Mean minimum	46	48	49	54	57	59	61	65	62	56	50	48	54.6
Highest	80	85	86	98	98	93	84	90	93	93	91	83	98
Lowest	32	34	36	41	45	51	55	54	53	48	38	32	32
Humidity:[a]													
Average relative (per cent)	73	75	77	76	79	79	81	81	82	79	72	72	77.3
Average absolute (inches)	0.277	0.298	0.347	0.373	0.402	0.465	0.517	0.555	0.555	0.417	0.334	0.310	0.404
Precipitation, average in inches	2.20	1.91	1.55	.73	.35	.06	0	.02	.04	.29	.76	1.90	9.81
Wind:													
Prevailing direction	NW.	NW.	W.	W.	W.	W.	W.	W.	NW.	NW.	NW.	NW.	NW.
Average hourly velocity (miles)[a]	4.9	5.4	5.5	5.6	6.0	5.8	5.5	5.7	4.9	4.7	4.8	4.9	5.4
Weather:													
Average number of days—													
Clear	20	20	20	18	18	14	24	22	21	20	23	19	239
Partly cloudy	6	6	5	8	8	7	3	6	5	6	5	5	70
Cloudy	5	2	6	4	5	9	4	3	4	5	2	7	56
Rainy	6	7	7	5	3	1	0	0	1	2	3	7	42
With fog	2	1	1	2	0	1	1	1	1	5	2	1	18
Largest number of days—													
Clear	25	25	25	26	24	23	30	28	28	27	28	29	30
Partly cloudy	15	11	12	11	11	17	13	10	8	13	11	8	17
Cloudy	9	13	12	13	17	11	4	10	11	12	13	15	17
Smallest number of days—													
Clear	12	9	8	9	3	5	18	14	16	12	12	10	3
Partly cloudy	3	2	2	2	2	3	1	1	0	2	0	1	0
Cloudy	2	0	2	2	5	0	0	0	0	2	2	1	0

[a] Data from the San Diego Weather Bureau station, which is 2½ miles northeast of Coronado and 60 feet higher.

GILROY.

[Data from records of Southern Pacific Railway Company.]

Gilroy is situated near the southern line of Santa Clara County, 30 miles southeast of San Jose, in latitude 36° 59′ north, longitude 121° 33′ west; elevation, 193 feet.

The mean annual temperature, based upon records covering twenty-seven years, is 58.4°. July and August are the warmest months, with mean temperatures of 68.8° and 67.9°, respectively, and the coldest month is January, with a mean of 46.5°. The highest monthly mean recorded is 77.3°, in July, 1875, and the lowest 39.9°, in December, 1874. Following are the maximum temperatures in the past five years: 103° in August, 1897; 107° in July, 1898; 99° in June, 1899; 106° in August, 1900, and 104° in August, 1901. The lowest temperatures recorded in recent years are 23° in December, 1897, and 20° in December, 1898.

The average annual precipitation, from 1874 to 1900, inclusive, is 19.55 inches. The rainy season extends from October to April, the greatest precipitation occurring in December and January, and frequent rains occur in May and September. The greatest monthly precipitation recorded is 12.33 inches, in December, 1880, and the greatest annual, 32.95 inches, in 1884.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1874	46.5	46.5	49.0	57.3	66.8	72.4	71.6	68.5	66.4	57.7	57.2	39.9	58.3
1875	43.3	45.2	48.4	63.6	75.5	70.2	77.3	68.6	63.8	63.3	52.3	48.1	60.0
1876	43.2	46.0	52.9	60.8	63.7	68.9	68.4	67.1	65.8	61.9	54.7	48.8	58.5
1877	51.3	54.8	59.1	59.0	61.8	69.4	71.1	67.7	69.5	58.0	52.5	47.9	60.2
1878	49.3	49.8	54.4	57.4	63.0	64.1	66.3	66.4	65.6	61.9	53.9	45.3	58.1
1879	44.6	53.2	56.6	58.5	60.6	66.4	66.4	68.1	65.8	60.9	50.6	45.0	58.1
1880	43.7	44.1	46.8	53.7	60.2	63.5	64.3	64.8	63.6	59.4	47.0	50.7	55.2
1881	49.0	53.3	54.2	59.8	61.4	65.1	68.6	65.6	66.8	58.6	49.1	48.1	58.3
1882	43.7	43.8	55.3	55.1	61.7	63.9	66.5	66.8	64.5	58.4	52.1	48.0	56.6
1883	43.2	45.6	55.4	55.1	60.8	68.9	72.0	68.5	69.6	60.2	49.8	47.2	58.0
1884	46.5	48.4	54.1	56.8	63.0	65.2	71.1	69.9	65.6	60.0	53.8	49.6	58.7
1885	50.0	52.5	58.6	59.5	65.1	65.1	69.0	69.6	68.4	63.4	55.0	50.8	60.6
1886	48.7	55.5	55.9	58.6	62.7	69.3	72.5	71.5	65.3	57.9	51.5	53.2	60.2
1887	47.7	46.8	56.5	56.9	62.4	66.6	65.0	63.7	67.9	64.1	52.7	46.3	58.0
1888	44.8	51.1	52.3	62.0	61.8	71.9	71.4	74.1	70.8	61.7	55.4	51.4	60.7
1889	46.0	49.5	56.7	61.3	63.7	67.1	68.6	69.1	67.8	61.1	54.8	48.7	59.5
1890	43.8	47.7	54.1	58.3	63.7	65.2	68.7	66.2	65.8	61.2	54.1	48.2	58.1
1891	46.9	49.3	53.7	58.0	60.1	68.1	67.7	71.6	67.5	60.6	54.1	47.6	58.8
1892	49.1	51.4	54.9	53.1	61.3	66.4	68.4	69.1	66.6	61.1	54.7	48.9	58.8
1893	47.8	49.8	55.1	57.6	62.3	66.9	69.1	67.6	63.1	60.0	53.9	51.0	58.7
1894	45.7	48.2	51.3	61.0	60.1	63.2	68.0	67.6	66.9	61.2	56.5	49.4	58.2
1895	47.6	51.6	52.6	57.1	61.8	67.2	67.3	67.6	63.9	58.9	48.8	44.4	57.4
1896	46.0	49.1	52.9	51.1	59.2	66.8	67.6	67.9	61.4	62.6	48.4	48.2	56.8
1897	42.1	48.1	49.4	57.3	63.2	67.2	68.3	67.3	64.7	53.6	50.0	43.5	56.2
1898	43.1	48.9	49.5	59.0	60.7	67.4	68.3	70.6	63.4	60.8	51.7	47.0	57.5
1899	51.0	51.2	53.5	59.2	58.0	67.6	67.1	63.8	68.0	60.6	55.2	49.6	58.7
1900	50.0	50.3	55.6	53.8	62.0	65.4	66.7	65.6	64.0	58.8	55.8	48.0	58.0
Mean (27 years)	46.5	49.3	53.7	57.8	62.5	67.0	68.8	67.9	66.0	60.3	52.8	48.0	58.4

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

1874	5.22	2.04	3.15	0.95	0.16	0.00	0.00	0.00	0.00	3.55	2.09	0.04	17.20
1875	7.70	0.75	0.69	0.00	0.00	0.30	0.00	0.00	0.00	0.00	11.75	1.88	23.07
1876	6.75	3.97	5.93	0.76	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	18.66
1877	3.75	0.00	0.82	0.27	0.44	0.00	0.00	0.00	0.00	0.10	1.14	1.56	8.08
1878	8.98	11.48	3.24	1.62	0.00	0.00	0.00	0.00	0.00	0.88	0.70	0.42	27.32
1879	3.80	4.02	3.98	1.47	1.34	0.15	0.00	0.00	0.00	1.00	1.68	3.63	21.07
1880	2.36	1.74	1.84	9.48	0.65	0.00	0.00	0.00	0.00	0.00	0.46	12.33	28.86
1881	6.84	1.95	1.14	0.59	0.00	0.11	0.00	0.00	0.34	0.46	0.81	2.35	14.59
1882	1.28	2.17	5.61	0.72	0.25	0.10	0.00	0.00	1.46	2.22	1.64	0.38	15.83
1883	2.28	1.02	2.77	1.19	2.23	0.00	0.00	0.00	0.27	1.01	0.33	0.78	11.88
1884	2.94	6.65	7.24	3.80	0.34	1.24	0.00	0.00	0.12	1.73	0.06	8.83	32.95
1885	2.08	0.09	0.28	1.48	0.00	0.12	0.05	0.11	0.00	0.00	6.77	2.40	13.33
1886	6.09	0.32	1.17	4.32	0.22	0.00	0.00	0.00	0.00	0.78	0.33	1.09	14.32
1887	0.90	5.14	0.82	2.05	0.00	0.00	0.00	0.00	0.43	0.00	1.15	4.32	14.81
1888	5.35	0.77	3.92	0.40	0.44	0.00	0.00	0.00	0.32	0.00	3.71	2.10	17.01
1889	0.46	1.00	4.22	0.63	2.00	0.00	0.00	0.00	0.00	5.36	2.98	10.21	26.86
1890	10.50	5.62	1.89	0.64	0.55	0.00	0.00	0.00	0.20	0.00	0.10	3.84	23.34
1891	0.75	6.76	0.97	2.18	0.04	0.00	0.00	0.00	0.03	0.07	0.11	5.80	16.71
1892	4.71	1.90	4.18	0.90	1.21	0.00	0.00	0.00	0.00	1.19	5.40	3.99	23.48
1893	3.11	4.34	4.80	1.35	0.32	0.00	0.00	0.00	0.06	0.02	0.72	1.87	16.59
1894	4.71	3.04	0.66	0.55	1.28	0.00	0.00	0.00	1.04	1.26	0.24	8.44	21.22
1895	10.39	1.79	2.54	1.90	1.21	0.00	0.00	0.00	0.00	1.27	1.04	1.91	22.05
1896	10.06	0.00	2.06	4.02	4.34	0.00	0.00	1.00	0.09	1.88	3.75	1.99	29.19
1897	2.05	4.97	5.53	0.45	0.02	0.09	0.00	0.00	0.05	1.94	0.35	1.93	17.38
1898	0.98	2.27	1.24	0.32	1.28	0.08	0.00	0.00	0.15	0.40	0.33	0.93	7.98
1899	6.00	0.32	9.80	0.51	1.00	0.00	0.00	0.00	0.00	2.40	3.09	2.79	25.91
1900	2.22	0.34	1.65	1.60	0.45	0.00	0.00	0.00	0.01	1.59	9.29	0.99	18.14
Average (27 years)	4.53	2.76	3.04	1.64	0.73	0.08	T.	0.04	0.17	1.12	2.22	3.21	19.55

HOLLISTER.

[Data from records of Mr. J. N. Thompson and Southern Pacific Railway Company.]

Hollister is the county seat of San Benito County, and is situated near the terminus of the Tres Pinos line of the Southern Pacific Railroad, 95 miles southeast of San Francisco, about 20 miles east of Monterey Bay, in latitude 36° 51′ north, longitude 121° 25′ west; elevation, 284 feet above sea level.

The mean annual temperature, based upon records covering twenty-seven years, is 58.9°. The warmest month is July, with a mean temperature of 67.2°, and the coldest is January, 48.8°. The highest monthly mean recorded in the last ten years is 76.7°, in July, 1891, and the lowest 42.8°, in January, 1898. The highest temperature recorded in recent years is 105°, in August, 1900, and the lowest is 19°, January 1, 1901.

The average annual precipitation during the past twenty-seven years is 12.31 inches, which is 7.24 inches less than the average for the same period at Gilroy, 15 miles to the northwest. The heaviest rains occur in January and December, and the greatest monthly precipitation in recent years was 7.35 inches, in December, 1889. Very little rain falls during the months of June, July, and August.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1874	46.3	48.5	51.4	57.0	60.9	66.6	68.3	68.7	68.6	60.5	56.6	50.4	58.6
1875	46.9	53.4	52.3	65.1	77.0	76.4	72.7	74.9	75.0	68.6	57.0	51.0	64.2
1876	45.5	48.1	49.2	61.9	67.5	74.4	69.7	70.7	68.1	62.3	58.3	47.7	60.2
1877	54.0	55.4	59.9	61.5	65.2	73.0	69.0	66.9	69.4	64.9	56.9	50.7	62.2
1878	50.3	57.4	54.3	55.9	63.6	62.8	64.3	62.8	64.4	59.9	54.3	46.9	58.1
1879	46.3	54.2	57.2	57.4	58.6	63.4	65.3	68.9	65.5	61.3	53.3	48.4	58.3
1880	45.6	46.5	49.7	55.1	61.7	61.6	62.9	63.5	62.8	59.2	51.9	52.8	56.1
1881	51.2	55.3	57.5	60.4	61.3	64.2	65.4	64.9	64.3	57.0	50.4	49.3	58.4
1882	50.0	49.8	55.3	59.2	61.0	60.0	66.0	66.9	64.9	58.7	51.4	51.6	57.9
1883	47.4	49.8	54.9	55.5	61.4	67.1	66.0	67.3	66.3	57.6	51.6	50.8	58.0
1884	49.6	53.5	53.1	56.0	62.9	67.4	70.6	69.5	66.2	61.6	57.3	52.4	60.0
1885	52.4	55.9	59.3	60.7	66.2	66.0	68.8	67.4	68.2	64.8	58.0	55.7	62.0
1886	49.7	55.3	53.1	58.7	64.7	68.0	71.3	73.3	68.3	63.3	53.8	52.1	61.0
1887	51.9	49.0	59.8	59.4	65.5	68.0	64.9	62.4	65.0	62.1	56.1	52.2	59.7
1888	47.6	54.3	54.9	60.9	61.3	67.9	68.4	68.4	63.7	59.0	53.9	53.5	59.5
1889	47.6	48.1	58.7	64.0	65.1	61.7	68.8	68.5	69.6	61.4	57.0	56.1	60.6
1890	49.9	55.6	57.9	59.5	66.1	66.0	70.4	66.5	62.5	59.7	54.3	51.3	60.0
1891	50.6	52.3	56.5	60.7	62.2	70.9	76.7	69.9	71.2	61.9	59.8	47.6	61.7
1892	51.1	54.0	56.3	55.4	61.3	63.3	65.6	65.8	63.0	58.5	51.5	47.9	57.8
1893	47.4	48.1	51.6	51.7	58.7	64.3	64.5	61.7	58.5	56.9	54.2	47.7	55.4
1894	47.0	49.1	53.1	61.9	61.8	64.4	67.3	68.9	63.8	61.9	58.4	52.1	59.1
1895	48.7	52.0	53.2	55.8	59.3	63.5	64.7	64.1	63.5	61.8	51.5	46.0	57.0
1896	51.0	52.8	53.8	51.2	56.7	61.9	64.3	61.4	59.1	57.0	51.4	51.0	56.0
1897	46.4	48.2	48.3	57.4	60.2	64.2	65.3	65.5	64.4	57.2	50.6	46.0	56.4
1898	42.8	52.7	50.6	59.9	56.1	65.0	64.2	65.8	64.4	61.7	52.4	45.6	56.8
1899	50.5	50.0	51.8	55.8	54.5	64.2	64.2	62.6	66.6	59.2	54.6	47.2	56.8
1900	50.3	51.1	56.6	53.0	60.8	64.1	64.1	64.1	64.2	59.5	56.4	48.0	57.7
Mean (27 years)	48.8	51.9	54.5	58.2	62.3	65.9	67.2	66.7	65.6	60.6	54.5	50.1	58.9

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1874	4.04	0.96	2.51	0.36	0.37	0.00	0.00	0.00	0.00	2.33	1.15	0.00	11.72
1875	5.10	0.16	0.50	0.00	0.00	0.13	0.00	0.00	0.00	0.00	7.68	0.00	13.57
1876	2.13	2.77	2.63	0.18	0.18	0.00	0.00	0.00	0.00	0.88	0.00	0.00	8.77
1877	1.83	0.25	0.53	0.78	0.42	0.00	0.00	0.00	0.00	0.00	1.08	1.54	6.38
1878	5.98	6.61	1.56	1.40	0.00	0.00	0.00	0.00	0.00	0.29	0.20	0.36	16.40
1879	1.83	1.99	1.90	1.53	0.64	0.07	0.00	0.00	0.00	0.95	1.06	2.51	12.48
1880	1.20	0.85	1.83	8.47	0.51	0.00	0.00	0.00	0.00	0.00	0.80	5.52	14.18
1881	2.59	1.81	1.05	0.61	0.00	0.10	0.00	0.00	0.24	0.20	0.64	1.08	8.32
1882	1.78	1.50	3.46	1.20	0.10	0.24	0.00	0.00	0.45	1.32	0.95	0.22	11.23
1883	1.44	0.86	1.84	0.99	1.54	0.00	0.00	0.00	0.25	0.68	0.35	0.90	8.85
1884	1.05	3.80	4.38	2.66	0.62	1.85	0.00	0.05	0.00	1.30	0.00	3.62	19.33
1885	0.58	0.17	0.35	0.45	0.00	0.23	0.27	0.00	0.00	0.00	4.91	1.12	8.08
1886	3.93	0.22	1.29	2.55	0.15	0.00	0.00	0.00	0.00	0.38	0.42	0.54	9.48
1887	0.57	3.63	0.55	1.32	0.04	0.02	0.00	0.00	0.43	0.00	0.60	1.54	8.70
1888	2.61	0.97	2.75	0.40	0.80	0.02	0.00	0.00	0.20	0.00	2.20	2.00	11.95
1889	0.88	0.87	3.06	0.81	1.26	0.00	0.00	0.00	0.00	2.91	2.09	7.35	19.23
1890	5.70	2.15	1.45	0.52	0.31	0.00	0.00	0.00	0.45	0.00	0.05	2.51	13.14
1891	0.46	3.22	1.35	2.01	0.05	0.00	0.00	0.00	0.00	0.00	0.37	4.09	11.55
1892	0.13	1.53	3.49	0.64	1.33	0.00	0.00	0.00	0.02	0.87	2.82	3.79	14.62
1893	1.50	2.87	4.25	0.98	0.32	0.00	0.00	0.00	0.11	0.04	0.77	1.98	12.82
1894	3.99	2.77	0.79	0.40	1.07	0.09	0.00	0.00	0.55	1.11	0.29	5.06	16.12
1895	5.74	1.49	1.95	1.34	1.00	0.00	0.02	0.00	0.06	0.82	0.88	1.07	14.37
1896	6.76	0.07	1.42	2.49	0.47	0.00	0.00	1.10	0.03	1.55	1.91	1.31	17.11
1897	1.06	2.99	3.38	0.51	0.06	0.14	0.00	0.03	0.06	1.08	0.46	1.47	11.24
1898	0.82	1.04	0.61	0.78	0.80	0.00	0.00	0.00	0.26	0.11	0.86	1.32	6.10
1899	2.35	0.25	4.01	0.55	0.00	0.67	0.00	0.00	0.00	2.19	2.32	1.70	14.04
1900	0.90	0.26	0.75	1.67	1.10	0.03	0.00	0.00	0.00	1.13	5.69	0.97	12.50
Average (27 years)	2.48	1.71	1.99	1.13	0.49	0.13	0.01	0.04	0.12	0.75	1.48	1.98	12.31

INDEPENDENCE.

MONTHLY MEAN TEMPERATURE (DEGREES FAHRENHEIT).

[Data by Mr. J. J. McLean, Observer, U. S. Weather Bureau.]

Years.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1894[a]												38.4	
1895[a]	37.8	45.5	49.2	57.3	65.6	71.6	78.0	76.0	68.3	60.0	48.3	37.8	58.0
1896[a]	43.2	47.2	44.0										
1897[a]													
1898[a]				62.0	62.1	74.2	80.4	80.1	72.0	60.0	48.2	39.7	
1899	40.2	46.5	50.5	59.4	60.0	74.2	80.4	72.6	74.6	55.4	49.4	43.1	58.8
1900	46.6	48.1	54.9	52.0	65.8	75.4	79.4	72.4	63.5	58.8	50.4	43.4	59.2
Sum	167.8	187.3	198.6	230.7	253.5	295.4	318.2	301.1	278.4	234.2	196.3	202.4	176.0
Mean	42.0	46.8	49.6	57.7	63.4	73.8	79.6	75.3	69.6	58.6	49.1	40.5	58.7

[a] Station closed.

SUMMARY OF MONTHLY MEANS AND EXTREMES OF TEMPERATURE (DEGREE FAHRENHEIT).

Month.	Highest monthly mean.		Lowest monthly mean.		Absolute maximum.		Absolute minimum.		Greatest daily range.	Mean daily range.	Mean variability.	Mean of 3 consecutive warmest days.	Mean of 3 consecutive coldest days.
	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.					
January	1900	46.6	1895	37.8	13, 1895	69.0	4, 1898	12.0	37.0	21.4	3.4	49.8	34.1
February	1900	48.1	1895	45.5	19, 1899	75.0	6, 1899	11.0	37.0	25.0	3.2	55.4	34.7
March	1900	54.9	1896	44.0	11, 1900	78.0	14, 1898	19.0	35.0	24.3	4.5	58.7	38.3
April	1898	62.0	1900	52.0	26, 1898	87.0	5, 1895	28.0	36.0	25.3	3.9	67.2	47.3
May	1900	65.8	1899	60.0	7, 1895	89.0	2, 1899	34.0	37.0	25.5	3.6	72.4	51.8
June	1900	75.4	1895	71.6	22, 28, 29, 1898	99.0	3, 1898	38.0	35.0	27.0	2.8	82.8	61.5
July	1898-9	80.4	1895	78.0	29, 1898	105.0	1, 1898	49.0	34.0	26.8	2.2	86.3	72.8
August	1898	80.1	1900	72.4	1, 1898	104.0	30, 1895	46.0	37.0	27.8	2.2	82.1	66.8
September	1899	74.6	1900	63.5	17, 1898 2, 1899	94.0	22, 1895	34.0	42.0	28.6	2.7	75.7	59.2
October	1895, 1898	60.0	1899	55.4	12, 1895	88.0	12, 1899 20, 1900	29.0	39.0	26.3	2.8	67.6	47.4
November	1900	50.4	1898	48.2	4, 1898	81.0	24, 1898 28, 1895	24.0	37.0	24.6	3.4	59.2	39.4
December	1900	43.4	1895	37.8	28, 1898	68.0	21, 1895	16.0	39.0	21.9	3.4	48.5	31.7
Annual	1900	59.2	1895	59.0	1898	105.0	1899	11.0	42.0	25.4	3.2	67.1	48.8

WEATHER.

Month.	Average number—				Month.	Average number—			
	Clear days.	Partly cloudy days.	Cloudy days.	Rainy days.		Clear days.	Partly cloudy days.	Cloudy days.	Rainy days.
January	15	8	8	6	August	25	4	1	1
February	23	4	1	2	September	24	4	2	2
March	18	10	2	3	October	24	6	1	2
April	19	8	2	2	November	18	8	3	4
May	20	8	3	3	December	17	10	4	4
June	24	5	1	1	Annual	251	80	30	31
July	24	5	2	1					

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.	Season of—	Seasonal.
1894	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.89	.....	.....	.....
1895	1.24	1.18	0.12	T.	0.01	T.	T.	0.04	T.	0.88	0.67	0.08	4.17	.....	.....
1896	1.67	0.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1897	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1898	.....	.....	0.00	0.16	0.23	T.	T.	0.11	0.20	0.00	0.10	0.20	.....	.....	.....
1899	0.54	T.	0.01	0.02	0.03	0.37	0.01	0.06	T.	0.30	0.85	0.56	2.75	1898-9	1.58
1900	0.31	0.05	0.67	0.62	0.22	0.04	0.08	T.	0.75	0.01	1.34	0.13	4.22	1899-1900	3.69
Sum	3.76	1.23	0.80	0.80	0.49	0.41	0.09	0.21	0.95	1.14	2.96	2.86	11.14	.....	.....
Mean	0.94	0.31	0.20	0.20	0.12	0.10	0.02	0.05	0.24	0.28	0.74	0.57	2.78	.....	.....

GREATEST MONTHLY PRECIPITATION (INCHES AND HUNDREDTHS) AND DATE.

Month.	Year.	Amount.	Month.	Year.	Amount.	Month.	Year.	Amount.
January	1896	1.67	May	1898	0.23	September	1900	0.75
February	1895	1.18	June	1899	0.37	October	1895	0.83
March	1900	0.67	July	1900	0.08	November	1900	1.34
April	1900	0.62	August	1898	0.11	December	1894	1.89

LEAST MONTHLY PRECIPITATION (INCHES AND HUNDREDTHS) AND DATE.

Month.	Year.	Amount.	Month.	Year.	Amount.	Month.	Year.	Amount.
January	1900	0.31	May	1900	0.01	September	1895, 1899	T.
February	1900	0.05	June	1895, 1898	T.	October	1898	0.00
March	1898	0.00	July	1895, 1898	T.	November	1898	0.10
April	1895	T.	August	1900	T.	December	1895	0.08

NUMBER OF TIMES MONTHLY PRECIPITATION HAS EXCEEDED THE NORMAL FOR FOUR YEARS.

Month.	Total.	First two years.	Second two years.	Month.	Total.	First two years.	Second two years.	Month.	Total.	First two years.	Second two years.
January	2	2	0	May	0	0	0	September	2	1	1
February	1	1	0	June	1	0	1	October	1	1	0
March	1	0	1	July	0	0	0	November	3	1	2
April	1	0	1	August	0	0	0	December	0	0	0

TOTAL NUMBER OF DAYS WITH PRECIPITATION SINCE DECEMBER 1, 1894.

Month.	Less than 0.01.	0.01 to 0.10.	0.11 to 0.25.	0.26 to 0.50.	0.51 to 1.00.	Month.	Less than 0.01.	0.01 to 0.10.	0.11 to 0.25.	0.26 to 0.50.	0.51 to 1.00.	Month.	Less than 0.01.	0.01 to 0.10.	0.11 to 0.25.	0.26 to 0.50.	0.51 to 1.00.
January	3	14	5	0	3	May	5	10	1	0	0	September	5	3	2	0	1
February	5	3	1	0	1	June	4	4	1	0	0	October	1	7	1	0	1
March	1	6	1	1	0	July	5	3	0	0	0	November	2	9	1	2	2
April	9	4	2	1	0	August	2	5	0	0	0	December	9	12	3	3	1

Station closed January 1 to November 30, 1894; March 1, 1896, to February 28, 1898.

FOGGY DAYS AND THUNDERSTORMS.

Month.	Total number of foggy days.	Number of thunderstorms.	Month.	Total number of foggy days.	Number of thunderstorms.	Month.	Total number of foggy days.	Number of thunderstorms.
January	0	0	May	0	0	September	0	3
February	0	0	June	0	3	October	0	0
March	0	0	July	0	7	November	0	0
April	0	0	August	0	7	December	0	0

Record began December 1, 1894—closed January 1 to November 30, 1894—March 1, 1896, to February 28, 1898.

NUMBER OF HIGH WINDS.

Month.	Velocity (miles).			Month.	Velocity (miles).			Month.	Velocity (miles).		
	30–35.	36–40.	Over 40.		30–35.	36–40.	Over 40.		30–35.	36–40.	Over 40
January	12	5	9	May	20	10	6	September	4	4	2
February	13	5	7	June	14	0	0	October	10	3	3
March	18	8	14	July	4	0	1	November	13	7	1
April	18	7	8	August	6	0	0	December	8	2	5

Record began December 1, 1894—closed January 1 to November 30, 1894—March 1, 1896, to February 8, 1898.

HIGHEST WIND VELOCITY, DIRECTION, AND DATE FOR EACH MONTH.

Month.	Velocity (miles).	Direction.	Date.	Month.	Velocity (miles).	Direction.	Date.	Month.	Velocity (miles).	Direction.	Date.
January	48	SE.	17, 1895	May	48	NW.	27, 1895	September	52	NW.	30, 1898
	48	SE.	2, 1899		48	SE.	10, 1900	October	48	NW.	1, 1898
February	66	S.	26, 1900	June	50	W.	1, 1898		48	W.	28, 1900
March	54	NW.	9, 1899	July	44	SW.	19, 1899	November	50	N.	21, 1895
April	52	SE.	28, 1899	August	39	W.	2, 1900	December	66	NW.	29, 1898
	52	W.	2, 1900								

Record began December 1, 1894—closed January 1 to November 30, 1894—March 1, 1896, to February 8, 1898.

AVERAGE VELOCITY (MILES PER HOUR) OF AFTERNOON WINDS.

Month.	2 to 3.	3 to 4.	4 to 5.	Month.	2 to 3.	3 to 4.	4 to 5.	Month.	2 to 3.	3 to 4.	4 to 5.
January	9.1	8.9	8.4	May	10.4	12.2	13.4	September	7.6	8.7	10.2
February	11.0	11.3	11.4	June	9.4	10.8	11.4	October	7.8	8.4	8.6
March	11.4	12.2	12.4	July	8.8	10.5	11.7	November	8.2	8.0	8.6
April	12.0	12.5	13.2	August	8.1	10.2	11.5	December	8.4	8.3	8.7

AVERAGE HOURLY VELOCITY (MILES PER HOUR).

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1 a. m.	6.9	8.8	9.3	9.8	10.4	8.7	8.0	7.9	7.1	7.1	7.0	7.1
2 a. m.	7.1	9.2	8.7	9.8	10.0	8.4	7.4	7.2	7.0	6.8	7.2	7.3
3 a. m.	7.2	9.0	9.2	9.8	9.2	7.7	6.6	6.3	7.1	7.1	7.5	7.1
4 a. m.	7.1	9.2	9.3	9.2	10.0	7.2	6.4	5.6	7.6	7.0	7.6	7.4
5 a. m.	7.1	9.0	9.2	9.0	9.2	7.4	6.2	5.4	7.2	7.2	7.6	7.3
6 a. m.	7.2	9.4	9.0	8.6	8.9	7.6	5.8	5.3	6.6	7.1	7.2	7.5
7 a. m.	6.8	9.1	8.9	8.3	8.8	7.3	5.8	5.3	6.3	7.1	6.8	7.6
8 a. m.	6.8	8.8	8.7	8.3	8.4	7.1	5.8	5.2	6.5	6.7	6.9	7.8
9 a. m.	7.3	8.8	8.4	8.4	7.8	7.3	5.9	5.0	6.7	6.9	7.0	7.8
10 a. m.	7.3	8.4	8.2	8.9	8.3	7.4	5.9	4.9	6.6	6.7	7.0	7.8
11 a. m.	7.5	8.0	8.8	10.3	9.5	8.3	6.5	5.8	7.1	6.8	6.8	7.5
12 noon	7.2	8.7	10.2	11.8	9.7	8.4	6.8	6.6	7.6	7.5	7.1	7.2
1 p. m.	7.8	10.1	11.3	11.8	9.6	8.3	6.8	6.2	8.1	8.6	8.1	7.7
2 p. m.	8.8	10.7	11.2	11.3	9.6	8.1	7.1	6.5	7.7	8.6	8.5	8.1
3 p. m.	9.1	11.0	11.4	12.0	10.4	9.2	8.8	8.1	7.6	7.8	8.2	8.4
4 p. m.	8.9	11.3	12.2	12.5	12.2	11.2	10.5	10.2	8.7	8.4	8.0	8.3
5 p. m.	8.4	11.4	12.2	13.2	13.4	11.6	11.7	11.5	10.2	8.6	8.7	8.3
6 p. m.	8.1	11.5	13.1	13.7	14.0	11.9	12.2	12.3	10.8	8.9	8.7	8.1
7 p. m.	8.0	11.4	13.8	14.0	14.3	12.2	12.0	12.4	10.6	9.3	8.0	7.4
8 p. m.	7.7	11.0	14.0	14.0	14.0	12.7	12.0	11.5	10.7	8.3	7.6	7.5
9 p. m.	8.1	9.7	12.6	13.3	13.6	12.1	12.4	11.0	9.6	7.8	7.3	7.4
10 p. m.	7.6	9.1	10.9	11.8	12.0	10.8	10.8	9.6	9.3	7.7	6.8	6.8
11 p. m.	7.1	8.4	10.6	11.2	10.7	9.2	9.4	9.3	8.7	7.4	6.6	6.5
12 midnight	6.9	8.9	9.6	10.2	10.6	9.1	8.7	8.5	8.1	7.1	6.6	6.8
Average	7.6	9.6	10.4	10.9	10.6	9.1	8.3	7.8	8.1	7.6	7.4	7.5

MEAN MONTHLY RELATIVE HUMIDITY (PER CENT).

Month.	A. M.	P. M.	Average.	Month.	A. M.	P. M.	Average.	Month.	A. M.	P. M.	Average.
January	58	41	49	May	34	14	24	September	27	12	20
February	44	26	35	June	27	12	20	October	38	20	29
March	41	17	29	July	23	10	14	November	45	28	36
April	35	18	25	August	30	12	21	December	54	37	45

Annual Meteorological Summary for the Years 1899 and 1900.

[λ=36° 48′ N.; φ=118° 12′ W.; gravity corr., −0.02. H=3,910 ft.; h_t=51 ft.; h_r=43 ft.; h_a=58 ft.]

Month.	Pressure.			Temperature.							Moisture.										
		Extremes.		Mean.					Extremes.		Dew-point.		Relative humidity.		Vapor pressure.		Precipitation.		Cloudiness 0–10.		
	Monthly mean.	Maximum.	Minimum.	8 a. m.	8 p. m.	Maximum.	Minimum.	Monthly.	Maximum.	Minimum.	8 a. m.	8 p. m.	8 a. m.	8 p. m.	8 a. m.	8 p. m.	Total.	Maximum in 24 hours.	8 a. m.	8 p. m.	Daylight.
1899.	*In.*	*In.*	*In.*	°	°	°	°	°	°	°	°	°	%	%	*In.*	*In.*	*In.*	*In.*			
January	26.06	26.38	25.54	34.4	46.6	51.2	29.2	40.2	68	12	21	18	60	38	0.113	0.107	0.54	0.44	2.6	3.8	2.8
February	25.98	26.27	25.45	40.0	56.0	58.8	34.2	46.5	75	11	14	8	33	15	0.082	0.068	T.	T.	0.9	1.8	1.2
March	25.88	26.32	25.56	43.2	58.5	62.4	38.6	50.5	75	26	17	3	34	11	0.095	0.058	0.01	0.01	2.2	4.2	2.6
April	25.90	26.14	25.54	50.1	69.2	71.5	47.2	59.4	83	33	19	9	30	12	0.105	0.070	0.02	0.02	1.8	3.1	2.3
May	25.86	26.08	25.66	50.4	69.0	72.0	48.1	60.0	88	34	19	11	30	12	0.107	0.082	0.03	0.02	3.0	2.5	2.1
June	25.90	26.15	25.62	63.3	85.6	87.8	60.7	74.2	96	46	33	32	34	19	0.192	0.194	0.37	0.26	1.3	1.7	1.1
July	25.92	26.08	25.79	69.7	92.6	94.0	66.8	80.4	100	62	25	18	18	7	0.135	0.106	0.01	0.01	0.2	1.2	0.7
August	25.88	26.07	25.66	62.6	84.6	85.9	59.4	72.6	91	52	28	22	28	11	0.157	0.123	0.06	0.06	0.8	1.9	1.3
September	26.01	26.24	25.74	64.4	87.0	88.8	60.3	74.6	94	51	21	17	19	7	0.114	0.095	T.	T.	1.0	0.7	0.7
October	25.95	26.26	25.43	47.8	62.6	67.5	43.3	55.4	84	29	21	19	37	21	0.119	0.111	0.30	0.18	1.5	2.8	2.0
November	26.00	26.20	25.62	43.0	55.2	61.0	37.8	49.4	70	30	26	26	50	35	0.140	0.144	0.85	0.77	2.8	4.1	3.3
December	26.07	26.39	25.68	37.2	48.1	54.1	32.1	43.1	67	21	19	17	48	30	0.103	0.098	0.56	0.45	1.6	3.2	2.5
Year	25.95	26.39	25.43	50.5	67.9	71.2	46.5	58.9	100	11	22	17	35	18	0.122	0.104	2.75	0.77	1.6	2.5	1.8
1900.																					
January	26.07	26.26	25.82	40.4	58.2	58.2	35.1	46.6	67	29	25	24	56	84	0.141	0.133	0.31	0.22	3.0	3.3	3.0
February	25.99	26.28	25.60	40.9	57.4	60.8	35.4	48.1	69	25	17	8	36	14	0.091	0.066	0.05	0.05	1.5	3.1	2.2
March	25.93	26.22	25.58	46.7	65.0	67.6	42.2	54.9	78	28	19	12	35	15	0.110	0.081	0.67	0.38	2.3	3.9	3.2
April	25.84	26.12	25.46	44.1	59.6	63.7	40.3	52.0	81	33	20	14	41	22	0.114	0.091	0.62	0.54	2.7	4.7	3.9
May	25.89	26.08	25.59	56.9	76.6	78.5	53.1	65.8	88	40	26	18	35	14	0.149	0.107	0.22	0.11	2.6	1.9	2.4
June	25.89	26.05	25.64	65.0	86.2	88.8	61.9	75.4	98	53	28	19	26	10	0.154	0.110	0.04	0.04	1.4	3.3	2.2
July	25.88	26.11	25.58	70.1	91.0	92.7	66.0	79.4	100	55	29	24	24	10	0.166	0.132	0.08	0.07	1.0	1.2	1.2
August	25.89	26.14	25.73	63.3	84.3	85.9	58.8	72.4	96	52	28	19	27	9	0.155	0.106	T.	T.	0.6	1.5	1.0
September	26.92	26.25	25.43	54.6	73.4	76.4	50.6	63.5	83	38	27	20	36	16	0.151	0.117	0.75	0.68	1.1	1.7	1.6
October	25.95	26.21	25.66	50.7	67.7	71.5	46.2	58.8	80	29	24	20	36	18	0.137	0.084	0.01	0.01	2.0	2.4	2.4
November	26.04	26.30	25.52	43.8	57.2	62.9	38.0	50.4	74	30	23	21	46	30	0.126	0.123	1.34	0.95	2.6	3.2	2.8
December	26.12	26.30	25.70	37.2	49.1	55.3	31.5	43.4	66	15	20	19	49	30	0.110	0.106	0.13	0.08	1.0	3.2	2.5
Year	25.95	26.30	25.46	51.1	68.4	71.9	46.6	59.2	100	15	24	18	37	18	0.134	0.105	4.22	0.95	1.8	2.8	2.4

Annual Meteorological Summary for the Years 1899 and 1900.

[H=3,910 ft.; h_1=51 ft.; h_2=43 ft.; h_3=58 ft.]

Month.	Wind.														Number of days.												
	By self-registers.					Number of winds, 8 a. m. and 8 p. m.												Precipitation.					Maximum temp.		Minimum temperature below 32°.	Electricity.	
	Average hourly velocity.	Prevailing direction.	Maximum velocity.	Direction at time of maximum velocity.	Number of days with gales.	North.	Northeast.	East.	Southeast.	South.	Southwest.	West.	Northwest.	Calm.	Clear.	Partly cloudy.	Cloudy.	0.01 inch and over.	0.04 inch and over.	Snow.	Hail.	Fog.	Below 32°.	Above 90°.		Thunderstorms.	Auroras.
1899.	*Miles.*		*M.*																								
January	8.8	NW.	48	SE.	2	6	0	2	4	3	0	10	36	1	24	4	3	5	3	5	0	0	0	0	18	0	0
February	10.8	NW.	54	NW.	2	16	2	0	8	4	0	5	20	1	25	2	1	0	0	0	0	0	1	0	7	0	0
March	11.8	NW.	54	NW.	6	4	0	0	8	9	3	9	28	1	18	13	0	1	0	1	0	0	0	0	4	0	0
April	10.9	NW.	52	SE.	3	3	1	1	14	2	4	12	23	0	24	6	0	1	0	1	0	0	0	0	0	0	0
May	11.4	NW.	42	W.	3	2	0	1	10	3	4	11	31	0	26	5	0	2	0	0	0	0	0	15	0	0	0
June	9.3	NW.	39	SE.	0	3	0	0	15	4	2	11	24	1	26	3	1	3	3	0	0	0	0	28	0	1	0
July	7.9	NW.	44	SW.	1	1	2	2	18	8	0	9	21	1	28	3	0	1	0	0	0	0	0	3	0	2	0
August	7.8	NW.	32	W.	0	1	0	0	18	11	2	12	18	0	27	4	0	1	1	0	0	0	0	14	0	2	0
September	7.5	NW.	36	W.	0	4	1	0	14	6	0	9	26	0	27	3	0	0	0	0	0	0	0	0	0	0	0
October	8.8	NW.	36	NW.	0	7	0	1	8	9	4	9	23	1	22	8	1	4	2	0	0	0	0	0	3	0	0
November	5.8	NW.	34	S.	0	2	0	2	16	10	5	2	23	0	16	12	2	4	3	0	0	0	0	0	4	0	0
December	8.3	NW.	33	N.	0	3	1	1	6	7	3	9	32	0	21	9	1	4	3	1	0	0	0	0	14	0	0
Year	9.1	NW.	54	NW.	17	52	7	10	139	76	27	108	305	6	284	72	9	26	15	8	0	0	1	60	50	5	0
1900.																											
January	5.9	NW.	40	N.	1	6	1	1	10	14	2	5	23	0	16	13	2	4	3	0	0	0	0	0	5	0	0
February	9.5	NW.	66	S.	3	9	0	0	11	3	2	4	27	0	23	5	0	1	1	0	0	0	0	0	6	0	0
March	8.3	NW.	44	W.	1	6	2	0	12	3	4	10	25	0	17	10	4	5	2	0	0	0	0	0	3	0	0
April	12.1	NW.	52	W.	3	4	3	0	12	5	2	4	30	0	15	12	3	4	3	0	0	0	0	0	0	0	0
May	10.1	NW.	48	SE.	2	5	1	0	17	7	0	8	22	2	22	7	2	4	2	0	0	0	0	0	0	0	0
June	8.7	NW.	41	W.	1	3	0	2	17	8	1	12	17	0	22	7	1	2	0	0	0	0	0	15	0	2	0
July	8.4	NW.	28	W.	0	0	1	1	15	7	0	13	25	0	26	4	1	2	1	0	0	0	0	23	0	1	0
August	7.9	SE.	39	W.	0	0	1	0	26	5	5	11	14	0	26	5	0	0	0	0	0	0	0	8	0	2	0
September	8.6	NW.	48	W.	1	5	0	1	16	7	6	9	16	0	22	7	1	4	3	0	1	0	0	0	0	2	0
October	8.0	NW.	48	W.	2	3	0	3	18	7	3	10	18	0	22	9	0	1	0	0	0	0	0	0	1	0	0
November	6.5	NW.	36	SW.	0	3	1	0	10	6	10	8	21	1	19	8	3	6	5	0	0	0	0	0	5	0	0
December	7.3	NW.	48	SW.	1	9	0	1	4	2	6	6	32	2	18	13	0	3	2	0	0	0	0	0	16	0	0
Year	8.4	NW.	66	S.	15	53	10	9	168	74	41	100	270	5	248	100	17	36	22	0	1	0	0	46	36	7	0

Average Snowfall Since December 1, 1894.

Month.	Amount.	Month.	Amount.	Month.	Amount.	Month.	Amount.
January	1.82	April	T.	July	0.00	October	0.00
February	T.	May	T.	August	0.00	November	0.00
March	0.02	June	0.00	September	0.00	December	0.68

LIVERMORE.

[Data from records of Southern Pacific Railway Company.]

Livermore is located in the foothills of Alameda County, about 40 miles southeast of Oakland, in latitude 37° 40′ north, longitude 121° 45′ west; elevation, 485 feet.

The mean annual temperature, based upon records covering thirty years, is 59.7°. July and August are the warmest months, with mean temperatures of 70.1° and 69.6°, respectively, and January is the coolest, with a mean of 49.3°. Maximum temperatures of 103° have been recorded in August, 1898, July, 1899, and June, 1901. The lowest temperature recorded in recent years is 23°, December 31, 1900. Minimum temperatures below 32° occur frequently in the months of January, February, and December, and occasionally in March.

The average annual precipitation from 1871 to 1900, inclusive, is 15.30 inches—about the same as that of Stockton. The greatest annual rainfall, 27.65 inches, occurred in 1884, and the least, 7.94 inches, in 1877. Rain seldom falls in July and August.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1871	50.0	52.9	52.5	59.8	63.2	75.9	79.0	77.9	80.2	68.4	52.7	49.6	63.5
1872	48.7	54.5	52.3	54.7	61.9	65.2	68.2	70.0	71.4	66.2	58.2	49.6	60.1
1873	49.4	48.2	49.8	52.7	62.2	68.0	72.2	70.4	69.8	67.7	54.9	44.3	59.1
1874	49.5	47.7	51.2	56.4	64.1	71.8	75.5	73.8	76.6	60.5	58.9	51.6	61.5
1875	52.1	56.8	53.8	64.2	71.6	70.8	72.9	73.9	72.4	70.3	57.8	52.8	64.1
1876	48.3	47.7	50.6	55.6	64.2	75.4	70.3	67.0	72.1	67.0	58.1	49.8	60.5
1877	52.5	58.3	58.4	57.3	60.7	73.3	77.4	69.5	71.7	64.8	59.0	53.6	62.6
1878	54.5	54.7	59.1	63.0	65.3	70.2	73.4	76.3	67.2	68.9	58.0	49.7	62.7
1879	52.1	59.9	60.2	62.0	61.7	72.2	72.6	77.6	73.7	65.6	57.7	49.8	63.8
1880	51.8	47.7	54.8	57.2	63.5	64.9	72.2	70.5	71.7	64.6	54.0	53.8	60.6
1881	54.2	56.0	55.7	63.3	65.4	67.0	72.8	68.1	68.5	61.6	55.4	51.1	61.6
1882	48.1	48.1	54.5	56.7	62.3	62.1	70.1	70.2	66.8	65.4	55.8	56.3	59.7
1883	47.9	45.2	56.3	55.6	61.9	71.0	69.7	68.4	69.5	59.7	44.6	51.2	58.4
1884	49.7	49.2	54.1	54.4	59.8	62.2	67.6	67.5	63.3	60.2	55.5	50.0	57.8
1885	54.4	55.5	56.9	56.4	59.2	57.1	63.3	65.7	64.4	60.6	54.4	51.2	57.4
1886	45.7	54.4	51.0	54.8	60.8	68.1	70.1	72.4	68.5	61.6	53.3	57.4	59.8
1887	52.1	45.7	57.3	56.1	60.5	65.9	66.3	66.4	67.1	66.4	57.3	52.5	59.5
1888	46.9	53.7	53.7	59.9	58.8	64.0	63.6	66.0	64.6	59.5	51.9	47.6	57.5
1889	45.6	52.8	57.2	59.0	62.3	64.9	66.8	67.8	68.0	62.4	53.8	46.9	59.0
1890	42.8	49.0	52.9	55.4	57.5	61.0	69.9	71.9	70.2	65.5	56.8	52.9	58.8
1891	50.5	49.1	57.2	55.5	58.8	68.2	74.3	72.3	66.6	61.6	54.6	47.5	59.6
1892	49.2	52.8	54.8	55.0	62.8	64.0	67.0	69.9	65.6	59.5	55.2	48.9	58.7
1893	44.3	49.1	50.2	54.8	60.8	64.3	70.2	68.9	61.6	59.2	54.3	51.8	57.5
1894	46.3	49.0	49.9	55.5	59.7	62.0	69.5	71.1	69.8	60.7	56.7	49.4	58.3
1895	47.2	51.3	52.7	55.7	60.8	69.7	68.5	69.3	64.3	63.8	53.8	47.3	58.7
1896	51.9	53.3	54.3	52.3	58.7	69.8	74.4	68.4	64.4	60.2	51.2	52.6	59.3
1897	45.5	49.7	48.1	59.6	64.3	81.8	72.3	68.6	63.7	57.7	52.5	51.2	59.6
1898	49.1	53.1	51.0	57.8	54.6	62.9	65.0	61.9	59.4	59.2	51.5	48.4	56.2
1899	51.4	50.6	51.0	54.8	55.1	68.1	61.7	64.8	67.3	59.4	55.5	46.5	57.2
1900	48.6	56.2	53.8	55.4	58.1	65.1	66.2	62.5	64.7	60.3	53.6	50.5	57.9
Mean (30 years)	49.3	51.6	53.8	56.9	61.4	67.6	70.1	69.6	68.2	62.8	54.9	50.5	59.7

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1871	1.42	1.93	0.36	1.25	0.02	0.00	0.00	0.00	0.00	T.	1.13	11.69	17.80
1872	2.15	2.69	0.65	0.43	0.00	0.32	0.00	T.	0.00	0.00	1.22	3.87	11.33
1873	1.04	3.73	0.68	0.15	0.00	0.00	0.00	0.00	0.00	0.42	0.70	4.48	11.20
1874	2.96	1.03	1.34	0.95	0.32	0.06	0.00	0.00	0.30	1.67	2.03	0.20	10.86
1875	5.40	1.20	0.35	0.00	0.00	0.52	0.00	0.00	0.00	0.00	7.23	1.62	16.32
1876	2.68	3.01	4.39	0.73	0.33	0.00	0.00	0.00	0.00	1.26	0.10	0.00	12.50
1877	2.47	0.56	1.10	0.13	0.39	0.00	0.00	0.00	0.00	1.27	1.29	0.73	7.94
1878	4.61	6.73	2.01	0.96	0.06	0.00	0.00	0.00	0.00	0.24	0.31	0.17	15.09
1879	2.83	1.78	2.49	0.75	1.34	0.20	0.00	0.00	0.00	0.83	1.06	1.94	13.22
1880	1.48	1.80	1.45	6.51	0.91	0.00	0.00	0.00	0.00	0.00	0.65	7.75	20.55
1881	2.40	2.62	1.06	1.93	0.00	0.04	0.00	0.00	T.	0.08	0.78	1.97	10.88
1882	1.07	1.72	4.85	1.03	0.20	0.00	0.00	0.00	0.34	1.52	1.48	0.38	12.59
1883	2.38	0.63	3.45	1.50	2.18	0.00	0.00	0.00	0.35	1.52	0.57	0.44	13.02
1884	4.03	5.29	5.92	2.70	0.20	1.73	0.00	0.10	0.30	1.14	0.02	6.22	27.65
1885	1.72	0.36	0.78	1.29	0.08	0.00	0.00	0.00	0.05	0.00	6.20	1.94	12.42
1886	4.20	0.24	1.18	2.36	0.00	0.00	0.40	0.00	0.00	0.30	0.70	0.81	10.19
1887	0.90	6.23	0.23	1.60	0.00	0.00	0.00	0.00	0.80	0.00	0.61	3.51	13.88
1888	3.20	0.94	2.51	0.60	0.66	0.30	0.00	0.00	0.76	0.00	3.80	2.21	14.98
1889	0.46	0.67	5.15	0.51	2.25	T.	0.00	0.00	0.00	3.94	2.95	8.63	24.56
1890	5.24	3.71	2.85	0.86	0.48	0.00	0.00	0.00	1.20	0.00	0.00	3.31	17.65
1891	0.54	4.18	2.50	1.88	0.40	0.15	0.00	0.00	1.32	0.05	0.38	4.42	15.82
1892	0.84	1.08	3.96	0.90	1.30	T.	0.00	0.00	0.45	1.65	4.97	7.27	22.42
1893	3.02	3.12	3.68	1.40	0.73	0.00	0.00	0.00	0.00	0.00	1.59	2.14	15.68
1894	4.97	5.36	0.81	0.58	1.19	0.52	0.00	0.00	1.45	1.15	0.50	8.56	25.09
1895	6.83	1.56	1.81	1.26	1.25	0.00	0.00	0.00	0.22	0.83	1.69	1.28	16.73
1896	7.16	0.17	1.50	3.11	0.39	0.00	0.00	0.73	0.55	1.48	3.02	1.71	19.82
1897	1.89	3.54	4.04	0.24	0.00	0.08	0.00	0.00	0.06	1.43	0.52	1.31	13.11
1898	1.47	1.78	0.78	0.45	0.96	0.35	0.00	0.00	0.95	0.35	0.25	1.61	8.95
1899	2.60	0.08	2.70	0.33	0.18	0.22	0.00	0.00	0.00	2.52	2.49	1.86	12.98
1900	2.44	0.34	1.11	0.86	1.10	0.00	0.00	0.00	0.18	1.93	4.48	1.26	13.70
Average (30 years)	2.81	2.27	2.19	1.24	0.56	0.15	0.01	0.03	0.31	0.85	1.76	3.11	15.30

MAMMOTH TANK.

[Data from records of Southern Pacific Railway Company.]

Mammoth Tank is situated in the eastern portion of San Diego County, on the line of the Southern Pacific Railroad, and in the southern portion of the Colorado desert, in latitude 33° 07′, longitude 115° 17′; elevation above sea level, 257 feet.

The mean annual temperature, based upon records extending over a period of twenty-three years, is 76°. The warmest month is July, with a mean temperature of 98.5°, and the coldest January, 53.9°. The highest temperature recorded was 130°, on August 17, 1885, and the lowest 22°, in December, 1895, making an absolute range of 108°. Temperatures of 100° and over have been recorded in every month except January, February, November, and December, and temperatures of 90° and above in every month of the year. Temperatures of 120° and over have occurred in five months—May, June, July, August, and September. Temperatures of 32° and below have occurred in January, February, and December.

The mean annual rainfall for twenty-three years is 1.81 inches; the greatest annual, 5.48 inches, fell in 1889, and the least, a trace, in 1897 and 1898. The greatest monthly rainfall was 3.18 inches, in December, 1889. June has been practically a rainless month, no appreciable amount having been recorded during that month and only a trace once in twenty-three years.

MAXIMUM TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1878	76	80	96	102	106	112	116	118	114	108	94	91
1879	.....	92	104	108	108	117	119	119	115	104	90	78
1880	78	78	84	102	104	115	114	114	114	100	88	80
1881	75	96	101	104	104	111	116	112	110	99	78	79
1882	73	78	93	104	105	112	119	118	118	112	90	84
1883	84	84	92	100	118	129	121	118	122	97	96	86
1884	74	85	86	101	113	128	126	128	115	105	96	84
1885	83	91	95	105	124	118	127	130	124	113	94	84
1886	90	89	99	101	120	124	128	126	120	99	88	82
1887	80	86	101	107	112	128	128	115	110	100	92	75
1888	85	85	100	105	105	111	117	114	113	103	83	75
1889	75	80	91	106	110	110	120	119	108	108	81	72
1890	80	84	92	100	111	112	118	116	115	96	94	78
1891	84	72	90	104	105	120	121	116	113	106	88	79
1892	80	82	89	98	110	116	120	115	110	99	86	84
1893	80	82	93	100	106	112	115	113	106	96	85	81
1894	75	82	96	100	102	105	115	110	108	100	92	68
1895	72	85	95	98	109	113	114	117	106	98	83	81
1896	80	88	100	90	114	122	117	116	110	104	85	76
1897	74	83	87	107	110	110	115	118	108	90	87	75
1898	78	87	88	109	108	116	120	118	111	101	92	76
1899	80	85	90	100	105	118	118	111	112	100	86	78
1900	79	85	95	96	106	110	115	111	101	95	88	80
Absolute maximum and year	90	96	104	109	124	129	128	130	124	113	96	91
	1886	1881	1879	1898	1885	1883	1886	1885	1885	1885	1883	1878

MINIMUM TEMPERATURE (DEGREES FAHRENHEIT).

1878	30	42	44	46	60	58	82	87	70	57	40	32
1879	.....	42	51	52	64	69	80	88	72	60	42	30
1880	32	34	40	48	62	80	74	76	68	58	38	34
1881	38	40	40	60	66	70	88	72	70	58	44	42
1882	28	32	36	50	63	58	80	86	67	63	44	32
1883	25	38	61	55	59	77	75	80	72	50	42	40
1884	33	30	48	52	62	73	78	85	70	53	54	40
1885	39	49	50	58	65	74	77	78	70	62	50	44
1886	37	50	48	50	64	72	84	80	80	59	42	40
1887	30	38	54	57	68	84	78	70	70	64	34	32
1888	27	40	45	55	55	70	80	83	80	62	45	40
1889	30	30	50	54	56	67	80	81	73	55	38	38
1890	29	41	50	60	65	72	78	75	75	52	52	40
1891	28	31	48	56	60	60	75	85	70	62	37	25
1892	29	33	46	51	58	50	76	71	70	58	40	26
1893	32	32	40	50	58	75	81	81	60	58	39	37
1894	27	33	40	58	62	68	85	80	65	50	40	37
1895	35	42	50	54	60	60	80	70	70	60	36	22
1896	31	32	40	50	61	75	85	73	63	52	40	35
1897	38	40	47	52	65	70	81	82	75	57	42	32
1898	30	47	50	55	60	80	90	90	75	61	44	33
1899	35	29	50	53	50	60	70	75	80	50	50	36
1900	41	35	57	50	59	62	80	82	62	58	49	32
Absolute minimum and year	25	29	40	46	50	50	74	70	60	50	34	22
	1883	1899	(a)	1878	1899	1892	1880	b1887	1893	(a)	1887	1895

a Several years.

b Also in 1895.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

[Elevation, 257 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	56.0	61.7	67.8	72.3	82.3	90.7	98.2	105.0	90.9	78.5	65.4	55.3	77.0
1879	56.2	67.8	75.0	77.7	77.9	93.8	99.2	103.0	95.3	78.6	64.6	53.3	78.5
1880	55.9	54.4	61.0	73.0	83.0	95.5	95.9	96.5	90.8	76.9	60.1	56.9	75.0
1881	54.4	63.2	63.8	76.9	84.0	92.1	98.1	94.3	87.3	74.3	59.9	56.6	75.4
1882	48.3	53.7	62.4	74.0	83.5	90.3	100.9	100.0	92.4	77.0	64.2	62.2	75.7
1883	54.3	58.4	74.4	73.4	82.5	99.4	97.6	99.1	94.2	74.1	64.9	60.0	77.7
1884	54.7	59.0	58.9	68.8	85.0	92.9	99.8	100.1	89.9	80.3	66.9	54.5	75.9
1885	54.5	64.4	67.0	76.8	85.0	90.2	98.6	98.2	90.5	82.1	68.6	61.3	78.1
1886	56.7	66.7	66.3	75.9	90.8	95.7	102.9	102.3	96.7	77.2	62.3	60.8	79.5
1887	57.7	58.0	78.4	80.4	91.2	100.2	100.5	90.4	88.4	80.4	65.8	51.0	78.5
1888	49.6	59.4	63.0	82.0	82.6	93.4	97.2	96.0	93.9	78.6	61.3	52.0	75.8
1889	51.2	56.5	67.1	79.3	84.2	90.3	100.2	98.8	88.6	77.4	63.0	57.0	76.1
1890	50.4	59.0	69.1	77.8	83.6	88.7	95.2	93.1	90.9	74.9	68.3	59.0	75.8
1891	54.9	53.2	65.3	77.1	81.2	92.3	101.7	99.1	92.6	81.7	64.0	48.0	75.9
1892	52.1	57.3	64.3	74.8	84.6	85.8	93.0	90.2	80.4	70.8	64.4	52.5	73.0
1893	57.1	56.7	61.5	75.6	84.3	97.1	99.0	96.0	83.8	74.7	60.1	56.6	75.2
1894	50.8	52.6	63.6	75.4	83.3	86.1	96.5	94.6	88.2	76.9	65.5	51.1	73.7
1895	50.9	58.6	64.4	76.3	81.6	88.2	93.7	92.3	86.5	77.6	58.4	51.2	73.3
1896	56.4	61.6	67.1	68.2	82.9	93.8	102.8	97.4	87.4	78.6	63.7	57.3	76.4
1897	55.2	57.9	61.0	79.1	88.7	92.6	99.4	103.3	90.6	74.1	63.7	58.6	76.6
1898	50.4	56.1	63.8	78.5	80.6	97.5	101.8	101.6	92.9	75.5	60.0	51.4	75.8
1899	54.6	60.0	65.2	74.3	77.7	90.1	97.8	91.0	91.0	73.0	65.4	55.6	74.6
1900	58.2	59.6	69.6	67.6	82.0	89.7	95.3	93.0	80.0	73.8	67.4	57.3	74.5
Mean (23 years)	53.9	58.9	66.1	75.4	83.6	92.5	98.5	96.8	90.0	76.8	63.8	55.4	76.0

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

1878	0.00	0.03	0.03	0.02	0.00	0.00	0.51	0.65	0.00	0.00	0.09	0.09	1.42
1879	0.00	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.28	0.13	1.64
1880	0.08	0.00	0.15	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72	0.97
1881	0.00	0.00	0.22	0.80	0.00	0.00	0.28	0.88	0.00	0.26	0.00	0.00	2.44
1882	1.29	0.00	0 00	0.00	0.00	0.00	0.00	0.20	0.00	0.50	0.20	0.00	2.19
1883	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	1.22	2.02
1884	T.	1.36	0.22	0.07	0.19	0.00	0.00	T.	0.00	0.00	0.00	0.87	2.71
1885	0.00	0.02	0.00	0.00	0.00	0.00	T.	0.62	0.00	0.00	1.01	0.00	1.65
1886	0.57	0.20	0.25	0.05	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.24	1.33
1887	0.00	1.38	0.00	0.18	0.00	0.00	0.00	0.00	0.33	0.03	0.20	0.05	2.12
1888	0.05	0.07	0.05	0.03	0.01	0.00	0.40	0.10	0.00	0.43	0.73	0.87	2.74
1889	0.62	0.03	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.11	3.18	5.48
1890	0.00	0.54	0.00	0.00	0.00	0.00	0.10	0.00	0.12	0.30	0.00	0.54	1.60
1891	0.00	2.73	0.00	0.02	0.00	0.00	0.00	1.65	0.00	0.00	0.00	T.	4.40
1892	0.28	0.42	0.50	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.00	0.00	1.50
1893	0.05	0.00	1.17	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.35	0.02	1.89
1894	0.00	0.00	0.00	0.00	0.00	0.00	T.	0.06	0.36	T.	0.00	1.22	1.64
1895	0.80	T.	T.	0.00	0.00	T.	0.00	0.00	0.00	0.00	0.12	0.00	0.92
1896	T.	0.00	0.25	0.00	0.00	0.00	0.00	0.01	T.	T.	T.	0.00	0.26
1897	T.	T.	T.	0.00	0.00	0.00	0.00	0.00	T.	T.	0.00	T.	T.
1898	T.	0.00	T.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T.	T.	T.
1899	0.06	0.00	0.00	0.00	0.00	0.00	0.15	1.10	0.00	0.00	0.23	T.	1.54
1900	0.15	0.00	0.25	0.30	0.00	0.00	0.00	0.00	0.20	0.26	0.00	0.00	1.16
Average (23 years)	0.17	0.35	0.19	0.06	0.02	T.	0.06	0.23	0.05	0.12	0.14	0.40	1.81

OAKLAND.

The thriving city of Oakland is located on the eastern shore of San Francisco Bay, in latitude 37° 48′ north, longitude 122° 17′ west, with elevations varying from 9 to 50 feet above sea level. It is the chief suburb of San Francisco, and has a population of about 75,000. The temperature and precipitation data following are from records kept by Messrs. J. B. McChesney, J. Hutchinson, J. B. Trembly, and Prof. Charles Burckhalter, of Chabot Observatory.

The mean annual temperature, based upon records covering twenty-five years, is 56°, practically the same as that of San Francisco. A comparison of the maximum and minimum temperatures of the two cities, however, shows that as a rule the days are warmer and the nights cooler

in Oakland than in San Francisco. July is the warmest month, with a mean of 61.8°, and January the coolest, 47.6°. The temperature seldom exceeds 90° and rarely falls below 32°.

The average annual precipitation is 24.96 inches, or nearly 2 inches more than that of San Francisco. January and December are the months of heaviest rainfall. Rain seldom falls during the summer months.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1876	45.4	50.5	52.1	54.8	56.5	61.6	60.0	59.6	60.4	58.7	54.3	47.3	55.1
1877	50.6	53.3	55.8	53.9	55.8	61.6	61.4	60.5	61.8	57.2	54.0	49.5	56.3
1878	50.0	50.8	54.0	55.3	57.9	59.3	59.2	59.6	58.2	58.5	53.4	46.5	55.2
1879	45.1	52.2	55.9	56.0	56.6	70.5	59.5	59.6	60.6	58.2	51.4	46.2	56.0
1880	43.9	46.1	47.6	52.6	57.5	57.8	59.5	65.6	59.3	58.1	50.8	51.6	54.2
1881	51.6	53.5	53.2	57.5	58.3	59.4	69.3	60.4	59.2	54.6	50.5	48.2	56.3
1882	46.4	45.8	52.0	52.6	57.8	59.2	60.6	60.4	60.7	57.6	51.0	49.7	54.5
1883	43.7	45.2	52.5	52.5	57.1	63.0	60.3	60.2	63.3	56.8	52.6	46.8	54.5
1884	47.0	48.3	53.2	54.3	59.3	60.8	63.4	61.5	59.4	56.4	55.4	51.2	55.8
1885	49.1	54.1	56.9	58.1	59.0	59.7	63.0	61.0	61.9	59.9	56.8	52.4	57.7
1886	49.4	54.6	51.3	54.4	59.4	60.8	62.8	61.2	61.1	57.0	52.2	52.0	56.4
1887	494.	46.1	53.9	54.8	57.3	59.6	57.5	58.5	60.7	61.0	53.4	49.5	55.1
1888	45.4	52.3	52.2	57.3	57.0	63.1	62.2	61.6	62.0	60.2	55.7	52.3	56.8
1889	47.7	51.4	56.9	59.0	59.0	61.3	59.8	61.0	63.2	61.1	57.0	49.9	57.3
1890	45.2	47.7	54.3	54.9	59.7	59.5	61.6	62.2	61.2	61.8	57.2	49.5	56.2
1891	51.2	49.4	53.5	53.4	55.3	60.4	61.2	63.0	62.2	58.7	56.9	48.7	56.2
1892	52.2	50.0	53.3	53.6	58.4	62.2	63.8	64.1	63.0	58.2	53.5	49.4	56.8
1893	42.3	48.7	50.9	54.4	57.7	62.3	62.0	61.3	61.8	58.0	54.0	51.0	55.4
1894	44.7	47.8	51.6	57.0	58.6	60.6	59.0	59.4	60.6	59.0	55.9	48.8	55.2
1895	47.2	52.1	50.6	56.4	59.0	60.0	63.1	58.7	61.6	56.0	53.9	46.9	55.5
1896	51.0	53.4	54.7	53.6	58.3	61.5	64.0	63.2	58.0	58.2	51.0	49.3	56.4
1897	46.1	49.1	49.0	59.8	61.0	64.0	63.0	61.5	63.0	58.2	50.7	47.5	56.0
1898	44.2	51.4	51.3	56.9	56.6	63.7	62.0	61.6	60.7	60.0	53.2	46.9	55.7
1899	51.0	50.7	52.6	56.3	57.0	61.8	60.8	62.0	60.6	57.3	55.2	47.8	56.1
1900	49.8	52.0	56.8	55.7	61.8	63.8	64.9	64.8	64.7	59.2	56.2	50.0	58.3
Mean (25 years)	47.6	50.3	53.0	55.4	58.1	61.5	61.8	61.3	61.2	58.4	53.8	49.2	56.0

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

1874	5.60	1.80	5.25	1.25	0.75	0.00	0.00	0.00	0.00	2.24	9.18	0.31	26.38
1875	6.15	0.30	1.65	0.60	0.10	1.64	0.00	0.00	0.00	0.30	7.84	4.10	22.08
1876	5.28	4.87	4.55	0.93	0.45	0.24	0.10	0.00	0.15	4.74	0.25	0.00	21.56
1877	4.19	1.42	0.96	0.22	0.30	0.00	0.18	0.00	0.00	0.45	1.62	1.75	11.09
1878	10.82	11.68	4.80	1.18	0.40	T.	0.00	0.00	0.00	1.85	0.65	0.31	31.14
1879	4.34	5.65	7.96	1.17	1.39	0.15	0.00	0.00	0.00	0.70	2.98	5.06	29.40
1880	1.71	2.19	1.70	8.46	1.04	0.00	0.00	0.00	0.57	0.00	0.35	12.57	28.59
1881	10.48	3.95	0.88	1.40	0.40	1.16	0.00	0.00	0.40	0.82	1.49	5.09	26.07
1882	2.42	2.05	4.20	1.51	0.15	T.	0.00	0.00	0.42	2.65	4.33	1.14	18.87
1883	1.95	0.70	3.83	1.20	0.50	0.00	0.00	0.00	1.00	1.03	0.90	1.15	15.76
1884	3.81	5.25	8.59	5.79	0.55	3.03	T.	0.25	0.35	2.80	0.05	7.73	38.20
1885	1.92	0.48	1.07	3.12	0.10	0.08	0.02	0.00	0.05	0.30	11.11	4.33	22.58
1886	8.12	0.30	2.57	5.11	0.30	0.00	0.15	0.00	0.05	1.69	0.45	3.60	22.24
1887	1.57	7.88	0.71	2.35	0.10	0.05	0.01	0.00	0.27	0.00	0.78	3.22	16.89
1888	6.42	1.02	4.44	0.10	0.38	0.46	0.00	0.00	0.92	0.06	3.52	4.82	22.14
1889	0.90	0.63	7.60	0.93	1.92	0.07	0.00	0.00	0.00	7.30	2.89	13.38	35.62
1890	10.22	5.72	3.52	1.18	1.17	T.	T.	T.	0.10	0.00	0.00	3.91	25.82
1891	0.95	11.37	3.10	2.77	1.60	0.11	0.15	0.00	0.87	0.20	0.55	6.64	28.31
1892	2.31	3.68	2.89	1.09	2.49	0.00	T.	T.	0.04	2.51	5.04	6.47	26.72
1893	3.68	3.25	5.76	0.98	0.34	0.00	0.00	0.00	0.03	0.29	5.76	2.57	22.66
1894	9.02	3.70	0.79	0.41	1.89	0.95	0.01	0.00	1.66	2.64	1.34	11.78	34.19
1895	11.32	3.09	2.00	1.93	1.12	0.00	0.03	0.00	1.07	0.13	2.09	1.74	24.52
1896	11.03	0.24	2.64	6.88	0.80	0.00	0.00	0.68	0.82	1.72	6.11	4.29	35.21
1897	3.32	5.99	6.00	0.52	0.29	0.42	T.	T.	0.16	3.27	1.18	2.49	23.64
1898	1.30	2.85	0.26	0.19	1.50	0.39	0.00	T.	1.16	1.48	0.60	1.48	11.21
1899	5.59	0.07	12.16	0.78	1.64	0.06	0.00	0.00	0.00	4.89	5.65	3.20	34.04
1900	4.81	0.87	2.67	1.48	1.07	0.08	0.00	T.	0.06	1.60	5.00	1.58	19.22
Average (27 years)	5.16	3.37	3.76	2.00	0.95	0.33	0.02	0.03	0.38	1.69	3.03	4.25	24.96

REDLANDS.

Redlands is situated in latitude 34° 31′ north, longitude 117° 11′ west. The elevation above sea level, 1,352 feet. The city is surrounded by mountains and nestles on the southern slope of the San Bernardino Valley. Within a distance of 15 miles are a number of towns and small cities of which may be mentioned San Bernardino, Colton, Riverside, Loma Linda, Highland, and Craftonville. Mount San Bernardino and Mount San Gorgonio, two of the highest peaks in southern California, wall in the valley to the north. The distance from Los Angeles by rail is 66 miles. The city is generally conceded to be one of the most beautiful in southern California. The mean annual temperature is 64°, which is about 2° warmer than Los Angeles. The prevailing wind direction is west. Owing to proximity of the mountains and the desert, the range of temperature is large. Maximum temperatures exceeding 105° are not infrequent during summer afternoons, but it must be remembered that the relative humidity is very low. The highest temperature recorded since 1897 is 113° on July 11, 1897. The lowest temperature for the same period, 26° on January 1, 1901. Owing to the topography, however, lower temperatures may have been experienced within short distances from the point of observation. The annual rainfall, as determined from twelve years' record, is 14.70 inches.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1893	54.2	50.7	51.9	58.7	66.0	73.1	77.0	77.5	68.4	62.2	54.0	53.6	61.4
1894	46.8	46.7	52.1	61.9	63.2	68.4	80.1	77.9	71.4	67.1	62.1	52.6	62.5
1895	47.7	52.3	55.7	62.0	68.2	73.7	72.6	76.7	68.9	65.0	60.4	52.9	63.0
1896	53.5	52.9	57.8	57.8	66.2	80.2	82.3	78.9	73.0	68.8	56.5	53.0	65.1
1897	48.7	48.2	49.9	63.0	69.3	74.7	82.2	83.0	71.7	60.4	57.1	49.7	63.2
1898	45.0	54.4	54.8	67.2	66.0	77.1	77.6	81.1	76.8	69.0	58.2	52.4	65.0
1899	53.4	54.6	54.8	62.2	60.8	70.6	77.6	73.4	79.0	63.6	60.4	55.9	63.9
1900	56.8	57.6	60.8	55.9	66.6	72.2	77.0	71.6	67.6	63.9	62.4	55.9	64.0
Mean (8 years)	50.8	52.2	54.7	61.1	65.8	73.8	78.3	77.5	72.1	65.0	58.9	53.2	63.5

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

1889	0.68	1.47	5.70	0.99	0.58	0.00	0.00	0.28	0.31	1.50	0.52	13.72	25.75
1890	4.69	3.03	0.89	0.16	0.68	0.00	0.00	2.16	0.88	0.29	0.00	3.02	15.80
1891	0.00	9.28	1.19	0.91	1.10	0.28	0.00	1.63	0.97	0.00	0.00	1.51	16.82
1892	0.87	4.37	2.06	0.13	0.00	0.00	0.00	0.00	0.03	0.00	0.63	1.58	9.67
1893	3.02	3.93	7.22	0.26	0.00	0.00	0.21	0.00	0.69	0.95	0.50	3.46	20.24
1894	1.43	1.04	1.01	0.25	0.64	0.00	0.00	0.09	0.17	0.07	0.00	7.38	12.08
1895	8.66	1.30	3.29	1.37	0.57	0.00	0.00	0.00	0.00	0.03	2.03	0.52	17.77
1896	1.52	0.24	3.96	0.01	1.14	0.06	0.01	2.00	0.00	1.72	2.07	1.37	14.10
1897	5.11	5.83	3.00	0.14	0.63	0.00	0.06	0.00	0.83	2.38	0.16	0.70	18.84
1898	1.96	0.79	0.99	0.31	2.15	0.00	0.10	0.00	0.00	0.04	0.22	0.62	7.18
1899	1.92	0.71	1.50	0.08	0.24	0.87	0.00	0.04	0.05	0.65	1.28	0.46	7.80
1900	1.20	T.	0.78	2.03	1.41	0.00	0.04	0.00	0.50	0.53	3.88	0.00	10.37
Mean (12 years)	2.59	2.67	2.63	0.55	0.76	0.10	0.04	0.52	0.37	0.68	0.94	2.86	14.70

RIVERSIDE.

Riverside is situated in latitude 33° 58′ 30″ north, longitude 117° 22′ 30″ west. The elevation above sea level, 851 feet. The city lies in the valley of the Santa Ana River and is surrounded by hills and mountains. Riverside is said to be the largest orange-growing community in the United States. The city is a large one in area, approximating 56 square miles. About 35 square miles are under irrigation. The mean annual temperature is 63°, and the mean annual rainfall 10 inches. Afternoon temperatures in summer are high, often exceeding 105°. The highest recorded temperature since 1897 was 112° on September 11, 1898. The lowest temperature, 26°, has occurred on several dates.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1882	48.0	51.0	57.0	60.2	67.8	72.4	78.6	79.8	75.1	64.9	57.0	56.5	62.4
1883	52.3	51.5	60.9	60.2	66.7	78.1	79.4	79.6	76.8	62.0	58.6	54.6	65.1
1884	52.5	54.6	55.0	60.3	67.2	71.5	77.7	78.2	69.2	63.6	59.7	51.3	63.4
1885	51.9	56.2	61.6	63.8	69.0	71.3	77.3	81.5	74.6	67.2	58.8	55.5	65.7
1886	53.7	58.0	55.2	59.6	68.7	74.1	77.0	79.2	72.8	66.7	55.1	55.4	64.1
1887	53.6	48.6	60.0	60.5	66.2	71.4	76.2	73.6	73.3	66.5	57.9	50.1	63.2
1888	48.4	51.2	58.1	62.4	62.5	70.2	76.3	75.3	74.4	64.1	56.0	51.8	62.1
1889	48.2	51.9	56.5	62.2	64.0	69.5	75.9	76.1	71.3	61.7	55.5	51.6	62.0
1890	43.0	50.2	52.5	58.0	62.5	67.1	76.1	75.8	69.6	63.0	57.7	54.0	60.8
1891	49.3	48.0	53.8	57.8	60.3	67.6	78.2	77.8	70.0	66.6	58.4	48.3	61.3
1892	53.4	53.8	56.6	59.8	64.9	68.2	73.1	74.3	70.4	62.0	59.5	51.0	62.2
1893	52.5	50.4	51.5	60.7	64.9	70.8	74.8	75.7	65.5	62.0	54.0	54.0	61.4
1894	47.3	48 4	54.2	60.3	62.4	63.8	75.2	74.4	71.6	64.8	61.5	53.2	61.4
1895	49.8	50.8	56.7	60.6	67.7	71.4	74.8	75.2	71.6	66.0	56.6	51.4	62.7
1896	55.6	57.5	58.1	55.4	65.1	73.4	76.0	73.8	71.1	67.6	57.6	56.0	63.9
1897	52.6	50.1	51.1	63.3	66.0	69.0	75.3	77.7	71.9	61.5	59.2	51.7	62.5
1898	48.2	57.3	53.5	64.1	[65.2]	70.7	75.5	79.6	75.4	68.1	59.0	52.4	64.1
1899	52.8	53.4	54.5	61.0	60.6	69.2	76.8	72.4	77.5	63.0	60.2	55.8	63.1
1900	56.9	57.6	61.0	56.5	67.0	71.4	75.8	71.4	68.2	64.4	64.8	59.4	64.5
Mean (19 years)	51.1	52.7	55.9	60.4	65.2	70.6	76.3	76.4	72.1	64.2	58.2	53.4	62.9

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

1881	0.48	0.25	1.30	0.74	0.03	0.00	0.00	0.00	0.10	0.40	0.25	0.40	3.95
1882	1.70	1.40	1.08	0.72	0.08	0.18	0.00	0.00	0.00	0.13	0.29	0.20	5.78
1883	0.09	0.83	0.89	0.26	0.25	0.00	0.00	0.00	0.00	0.97	0.00	2.25	5.54
1884	0.84	7.94	6.56	1.67	1.99	0.52	0.00	3.00	0.00	0.12	0.12	2.56	25.32
1885	0.77	0.00	0.01	2.15	0.24	0.00	0.00	0.00	0.00	0.02	1.34	0.62	5.15
1886	2.68	1.38	1.95	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.54	0.04	8.02
1887	0.13	3.30	0.02	1.70	0.17	0.02	0.00	0.00	0.00	0.75	0.87	0.85	7.81
1888	4.17	1.05	3.84	0.18	0.05	0.00	0.00	0.00	0.00	0.00	2.83	3.37	15.49
1889	0.87	1.30	5.10	1.83	0.25	0.00	0.00	0.00	0.09	1.35	1.82	7.80	20.41
1890	4.44	1.96	0.60	0.06	0.09	0.00	0.00	0.05	0.79	0.13	0.32	3.21	11.65
1891	0.13	6.36	0.40	1.04	0.46	0.00	0.00	0.00	0.13	0.03	0.00	1.29	9.84
1892	0.00	2.60	1.07	0.00	1.32	0.00	0.00	0.00	0.00	0.29	0.28	0.94	6.50
1893	3.01	1.95	5.71	0.24	0.04	0.00	0.33	0.00	1.27	1.08	0.67	2.05	16.35
1894	0.69	0.33	0.70	0.00	0.00	0.00	0.00	0.26	0.20	0.05	0.00	5.22	7.45
1895	6.48	1.09	2.54	0.29	0.26	0.00	0.00	0.00	0.00	0.00	1.25	0.24	12.15
1896	1.72	0.00	3.16	0.56	0.58	0.00	0.02	0.23	0.00	2.07	1.48	0.92	10.74
1897	3.38	3.07	1.62	0.03	0.03	0.00	0.00	0.04	0.09	1.67	0.02	0.95	10.90
1898	1.74	0.12	0.80	0.18	0.27	0.00	0.00	0.00	0.00	0.00	0.01	1.38	4.50
1899	2.09	0.89	0.90	0.00	0.13	0.30	0.00	0.00	0.00	1.03	0.57	0.41	6.32
1900	1.01	0.01	0.95	0.74	1.29	0.00	0.00	0.00	0.00	0.28	2.51	0.00	6.79
Mean (20 years)	1.82	1.79	1.96	0.69	0.38	0.05	0.02	0.18	0.13	0.52	0.76	1.74	10.01

SALINAS.

The Salinas Valley stretches in a southeasterly direction from Monterey Bay for a distance of 75 miles or more, having an average width of 10 miles. On the west side of the valley rises the Santa Lucia Range, with an altitude of about 5,000 feet, while on the east rises the Gabilan Range, of somewhat less elevation.

The city of Salinas has a mean annual temperature of 56°, based upon records extending over a period of twenty-six years. The coldest month is January, with a mean temperature of 48°, and the warmest July, 63°. The highest temperature recorded is 96°, and the lowest 20°, giving an absolute range of 76°. The date of the first killing frost reported during the past winter was December 6. Killing frosts in the spring may occur as late as the beginning of April.

The mean annual rainfall is 14.12 inches. This amount has been exceeded 13 times in the past twenty-six years. The rainfall is fairly well distributed for agricultural purposes. July and August are practically rainless. Twice in the past quarter of a century the annual rainfall has not amounted to 7 inches, viz, in 1898, when but 6.94 inches fell, and 1877, when but 6.81 inches fell. Both of these were unusually dry years in California. In June, 1884, 2.66 inches of rain fell. The two months of greatest rainfall were February, 1878, when 8.77 inches fell, and December, 1889, when 8.72 inches fell. No rain fell during the months of December, 1874, and February, 1896. During December, 1876, only a trace of rain fell.

The prevailing wind direction is from the south. In the summer months west and northwest winds are most prevalent, but from November to March south winds prevail. The largest number of rainy days occurs with south winds. During the past three years the average number of rainy days, i. e., days on which 0.01 inch or more of rain fell, were January, 7; February, 4; March, 5; April, 2; May, 1; June, 1; July, none; August, none; September, 1; October, 6; November, 4; December, 4. The number of clear days in January averages 16; in May, 11; in June, 20; in October, 16.

MEAN MONTHLY AND ANNUAL TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Se t.	Oct.	Nov.	Dec.	Annual.
1874	51.0	49.7	51.5	57.2	62.3	64.2	63.7	64.7	65.0	61.0	54.2	46.1	57.6
1875	47.8	56.5	50.6	54.9	55.2	59.5	58.6	56.1	56.0	55.3	56.0	53.0	55.0
1876	48.4	53.0	53.0	57.0	58.8	63.6	63.9	61.8	62.4	59.8	52.9	50.0	57.0
1877	54.6	56.0	58.0	55.0	59.4	65.1	64.3	61.8	64.4	56.9	57.6	51.3	58.7
1878	51.6	52.0	54.0	55.8	58.4	58.7	60.3	59.6	59.7	61.3	54.7	50.3	56.4
1879	48.2	53.3	56.4	57.5	57.5	57.8	57.8	60.3	60.2	56.5	51.7	49.5	55.6
1880	46.7	47.1	48.4	53.9	58.5	55.9	57.1	58.8	56.9	57.4	51.5	52.2	53.7
1881	52.5	54.0	53.9	57.5	59.4	61.7	62.9	59.9	58.0	50.0	49.2	46.8	55.5
1882	44.0	44.9	52.4	54.7	62.8	60.8	63.0	59.5	60.1	54.9	49.2	50.9	54.8
1883	44.8	48.0	54.8	54.9	68.2	64.4	62.5	61.9	62.0	56.0	50.8	49.4	56.4
1884	46.5	49.3	53.9	56.4	63.3	63.9	63.4	63.1	61.4	58.9	52.7	49.0	56.8
1885	47.6	49.0	53.7	61.0	61.3	61.7	63.4	61.2	62.4	54.0	54.9	49.8	56.6
1886	47.9	52.0	49.8	55.2	61.8	58.4	62.7	66.1	63.5	56.5	49.2	51.8	56.2
1887	47.7	45.2	55.1	54.6	60.5	64.2	60.1	59.3	60.3	61.1	51.3	45.8	55.4
1888	44.1	49.7	48.6	56.2	58.1	68.4	66.2	60.3	59.3	57.3	50.8	52.2	55.9
1889	44.0	47.8	53.9	57.8	59.0	60.1	60.3	60.0	65.0	58.4	53.6	51.2	55.9
1890	43.9	46.2	51.7	55.7	57.5	58.8	63.1	60.4	60.8	59.9	50.8	49.3	54.8
1891	47.6	47.1	52.7	53.1	57.9	64.5	63.1	61.7	57.9	52.9	51.7	44.6	55.0
1892	47.5	50.5	53.4	57.3	64.4	62.1	63.4	62.6	59.8	53.0	49.5	47.5	55.9
1893	47.1	45.1	47.7	50.0	61.2	64.6	63.9	64.8	63.1	56.6	56.9	49.7	55.9
1894	47.9	49.6	50.6	51.6	54.7	60.2	63.6	64.7	63.1	56.3	53.0	49.5	55.4
1895	46.5	53.9	55.9	58.4	62.1	63.3	63.4	60.4	61.7	58.0	50.3	45.5	56.6
1896	51.8	51.8	52.7	48.3	58.5	55.3	60.5	63.4	62.0	56.3	51.1	47.7	55.0
1897	44.7	43.9	44.1	58.7	61.0	67.6	65.8	65.6	63.1	59.2	50.6	48.2	56.0
1898	45.4	55.2	53.4	58.0	55.7	63.2	63.3	64.0	61.0	61.7	51.8	46.4	56.6
1899	50.6	52.4	54.1	58.3	60.8	61.4	66.5	60.4	58.6	55.5	60.5	58.6	58.1
Mean	47.7	50.1	52.5	55.7	59.9	61.9	62.6	61.6	61.1	57.1	52.6	49.5	56.0

MINIMUM TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1872	.....	.....	.....	.....	47	54	56	52	47	36	32	22
1873	36	30	36	.....	.....	.....	58	52	46	30	35	36
1874	31	32	33	43	45	50	52	52	48	46	33	23
1875	28	32	32	33	48	49	52	51	50	39	38	31
1876	30	30	32	40	44	40	51	52	51	42	35	31
1877	21	25	37	44	47	52	54	54	50	35	34	34
1878	30	28	37	41	48	51	51	52	50	42	30	26
1879	26	29	32	44	45	52	52	58	50	42	30	20
1880	25	25	32	41	44	49	52	52	45	41	28	38
1881	32	36	32	45	45	52	52	51	44	31	29	33
1882	22	28	32	42	44	53	53	52	50	40	30	28
1883	20	24	44	40	45	53	54	52	50	38	29	32
1884	30	25	34	44	50	54	53	54	45	37	40	26
1885	33	32	36	41	50	51	54	57	46	38	30	32
1886	29	38	35	38	49	51	52	54	46	39	31	32
1887	28	29	33	40	44	50	43	53	47	42	28	32
1888	22	35	30	42	51	51	54	52	47	40	31	38
1889	28	30	43	48	50	51	53	52	48	44	38	35
1890	30	30	38	47	48	50	53	55	52	42	40	40
1891	30	32	42	44	48	55	54	54	46	40	40	25
1892	32	38	42	47	48	54	55	52	52	34	36	30
1893	36	32	38	42	54	55	56	52	55	40	39	35
1894	26	34	37	40	45	50	54	52	50	44	38	32
1895	32	38	40	48	49	52	50	50	50	42	35	30
1896	29	36	37	35	45	40	45	53	52	45	32	36
1897	36	35	35	40	50	52	50	51	50	40	32	25
1898	27	31	32	43	45	51	50	52	50	49	31	27
1899	27	31	40	48	50	50	55	50	45	40	40	33
Absolute minimum and date	20 1883	24 1883	30 1888	33 1875	44 (a)	40 1876 1896	43 1887	50 1895 1899	44 1881	30 1873	28 1880 1887	20 1879

MAXIMUM TEMPERATURE (DEGREES FAHRENHEIT).

1872	.....	.....	.....	.....	84	90	71	79	80	87	82	80
1873	76	70	84	.....	90	.....	78	79	76	87	84	66
1874	66	66	70	70	82	79	77	76	88	85	75	73
1875	66	71	78	80	77	78	70	76	77	79	70	68
1876	62	69	73	79	68	79	76	75	82	76	81	76
1877	77	73	70	64	70	88	76	79	87	79	78	69
1878	67	63	74	72	70	71	70	71	76	85	78	80
1879	64	72	80	70	75	78	72	87	80	90	75	71
1880	74	64	65	64	87	76	72	70	71	86	83	70
1881	68	75	78	76	73	74	86	70	78	70	74	72
1882	65	66	76	70	72	71	72	73	74	81	75	76
1883	66	81	84	68	85	94	74	78	96	76	75	75
1884	65	76	72	72	80	72	75	76	75	84	80	66
1885	70	75	82	82	76	73	73	76	82	72	72	74
1886	68	73	68	75	77	71	76	78	88	69	80	78
1887	70	72	82	70	70	78	72	70	78	92	78	66
1888	63	74	70	79	74	75	84	76	74	82	77	67
1889	64	76	77	76	87	75	78	75	88	94	78	65
1890	59	63	67	54	80	67	71	68	70	95	60	62
1891	62	62	65	64	76	90	90	90	70	65	68	64
1892	62	62	70	75	95	75	85	80	72	68	68	62
1893	58	62	70	62	70	75	80	80	74	76	70	65
1894	63	62	65	65	78	80	85	94	87	92	80	68
1895	62	78	72	73	90	92	78	80	91	70	88	63
1896	68	78	70	68	95	80	78	76	75	80	68	65
1897	55	62	60	82	85	90	92	86	81	75	70	68
1898	68	77	68	80	70	90	76	75	80	87	77	72
1899	72	75	75	76	75	79	76	76	81	94	72	75
Absolute maximum and date	77 1877	81 1883	84 1873 1883	84 1890	95 1892 1896	94 1883	92 1897	94 1894	96 1883	95 1890	88 1895	80 1872 1878

(a) Several years.

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1873	3.40	2.12	0.80	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.20	4.25	10.97
1874	3.42	1.03	2.15	0.95	0.00	0.00	0.00	0.00	0.00	1.83	1.42	0.00	10.80
1875	4.50	0.15	0.40	1.42	0.00	0.26	0.00	0.00	0.14	0.00	5.17	1.98	14.02
1876	6.16	3.55	4.52	1.42	T.	0.00	0.00	0.00	0.05	1.04	0.05	T.	16.79
1877	2.54	0.16	0.30	0.10	0.20	0.00	T.	T.	0.00	0.12	1.00	2.39	6.81
1878	7.05	8.77	2.57	1.92	T.	0.00	0.00	T.	0.05	0.60	0.20	0.35	21.51
1879	2.42	2.81	1.85	1.69	0.82	0.15	0.00	0.00	T.	1.05	1.08	2.28	14.15
1880	1.65	1.16	1.64	3.90	0.46	0.00	0.00	0.00	0.00	T.	0.57	5.56	14.94
1881	3.32	2.32	1.26	0.66	0.00	0.38	0.00	0.00	0.10	0.28	0.67	1.24	10.23
1882	1.78	2.31	4.86	1.01	0.49	0.19	0.00	0.00	0.38	1.43	0.65	0.90	14.00
1883	0.91	0.95	2.26	1.28	1.98	0.00	0.00	0.00	0.19	1.19	0.25	1.95	10.96
1884	1.70	4.49	5.09	3.05	0.72	2.66	0.00	0.18	0.11	1.79	0.28	4.46	24.53
1885	1.09	0.05	0.19	1.21	0.12	0.00	0.05	0.00	0.02	0.08	6.60	1.30	10.71
1886	5.10	1.47	2.16	3.83	0.20	0.00	T.	0.00	0.00	0.62	0.82	0.72	14.92
1887	0.75	4.73	0.54	1.63	0.07	0.00	0.00	0.00	0.71	0.00	0.98	2.16	11.57
1888	4.15	0.53	3.28	0.00	0.89	0.00	0.00	0.00	0.56	0.00	1.64	2.20	13.25
1889	0.65	1.65	3.33	0.95	0.68	0.00	0.00	0.00	0.00	4.20	2.41	8.72	22.59
1890	6.19	3.03	1.79	0.60	0.65	0.00	0.00	T.	0.29	0.00	0.44	2.05	15.04
1891	0.75	4.28	1.05	2.93	0.40	0.00	0.00	0.00	0.12	0.30	0.20	5.40	15.43
1892	0.48	1.48	2.78	0.88	1.29	0.00	0.00	0.00	0.16	0.86	2.26	4.30	14.49
1893	0.98	2.98	5.12	1.25	0.17	0.00	0.00	0.00	0.30	0.02	0.63	1.53	12.93
1894	5.07	3.30	0.58	0.45	1.53	0.29	0.00	0.00	0.95	1.06	0.45	4.95	18.63
1895	5.05	1.33	2.07	0.94	0.45	0.00	0.00	0.00	0.00	0.37	1.00	0.88	12.09
1896	5.80	0.00	1.50	2.40	0.47	0.00	0.00	0.36	0.00	1.20	2.64	1.75	16.12
1897	0.55	3.07	3.80	0.35	0.00	0.30	0.00	0.00	0.55	1.45	0.43	0.82	11.32
1898	0.73	1.58	0.91	0.22	1.08	0.30	0.00	0.00	0.14	0.27	0.31	1.40	6.94
1899	3.94	0.50	4.19	0.72	0.71	0.00	0.00	0.00	0.00	1.14	2.77	1.62	15.59
Average	2.97	2.21	2.26	1.32	0.50	0.17	T.	0.02	0.18	0.78	1.30	2.41	14.12

SALTON.

[Data from records of Southern Pacific Railway Company.]

Salton is situated in the Colorado Desert, near the southern line of Riverside County, on the borders of Salton or Old Dry Lake, about 100 miles northwest of Yuma, and is 263 feet below sea level. The highest temperature in the past four years was 126°, July 13, 1900, and the lowest 20°, December 16, 1897. The total rainfall in the last twelve years was only 30.77 inches, an average of 2.56 inches annually.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	64.0	67.9	67.8	79.8	79.2	92.5	95.3	95.6	86.9	74.2	61.9	57.5	76.9
1890	50.4	57.3	65.4	73.4	81.7	88.6	97.2	89.3	87.9	72.6	62.7	58.2	73.7
1891	53.5	53.3	66.9	78.0	78.7	86.9	97.1	96.1	86.7	77.3	62.4	53.2	73.8
1892	53.2	59.3	66.9	73.5	82.8	88.8	94.6	96.5	92.9	81.0	70.3	57.8	76.5
1893	58.4	60.7	66.1	77.5	79.2	95.9	98.7	98.9	90.7	79.4	70.7	66.3	78.5
1894	53.2	54.6	68.6	80.4	84.1	90.3	100.1	99.3	91.4	82.7	68.3	54.2	77.2
1895	50.9	60.2	67.8	80.1	90.1	96.4	96.5	97.9	91.4	82.7	69.9	60.2	78.7
1896	63.6	65.6	69.4	74.0	84.1	100.6	101.2	98.2	87.3	85.3	70.8	56.4	79.7
1897	54.0	53.8	59.2	79.1	94.0	98.6	107.0	107.4	99.0	79.0	68.7	52.5	79.4
1898	49.1	49.6	57.8	82.1	73.3	93.7	100.0	98.4	92.4	78.0	59.1	46.2	73.3
1899	51.9	57.7	62.6	75.2	76.6	94.0	102.1	95.8	99.9	78.1	69.6	57.8	76.8
1900	65.7	65.9	74.0	70.3	98.5	99.4	97.0	92.9	85.8	78.9	67.3	53.0	78.7
Means (12 years)	55.7	58.8	66.0	76.5	83.1	93.8	98.9	97.2	91.0	79.1	66.8	56.1	76.9

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	0.49	5.12	1.21	0.00	0.00	0.00	0.00	0.30	0.00	0.15	0.13	3.79	11.19
1890	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.37	1.35	0.00	0.00	0.32	2.64
1891	0.00	1.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.87
1892	2.75	0.43	0.60	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.88
1893	0.00	0.00	0.22	0.00	0.70	0.00	0.76	0.00	0.12	0.00	0.71	T.	2.51
1894	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	T.	0.00	1.30	1.53
1895	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T.	T.	0.00	T.
1896	T.	0.00	0.00	0.00	0.00	0.00	0.18	0.51	0.00	0.93	0.46	0.62	2.70
1897	1.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	1.22
1898	0.45	0.00	0.35	0.00	0.00	T.	0.00	T.	0.00	0.00	0.00	0.59	1.39
1899	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.14	0.11	T.	1.00
1900	0.00	0.00	0.12	0.02	0.00	0.00	0.50	0.00	0.00	0.20	0.00	0.00	0.84
Average (12 years)	0.43	0.62	0.21	T.	0.07	T.	0.19	0.14	0.13	0.12	0.12	0.55	2.56

SAN BERNARDINO.

By Dr. A. K. JOHNSON, Voluntary Observer.

Quoting from Professor Davis, of Harvard College: "The average value of the atmospheric conditions of a region constitutes its climate. The most important climatic elements are, first, temperature; second, various forms of moisture, as vapor, cloudiness, and precipitation; then, wind in cyclonic storms. The pressure of the atmosphere is not a climatic element and needs not to be considered only with the division of the wind system."

Taking up the study of San Bernardino climate under this division, the following tables will show the average temperature by months for the past nine years, together with the highest and lowest record and years in which it occurred:

MEAN MONTHLY AND ANNUAL TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1892	52.9	53.4	56.5	59.0	64.4	67.7	73.5	75.0	70.6	61.4	57.8	50.4	61.9
1893	53.9	52.6	53.8	58.8	64.1	71.0	72.3	75.6	67.0	61.0	54.0	52.0	61.3
1894	47.0	47.8	54.0	60.3	62.8	65.8	74.6	75.4	70.4	64.6	60.0	49.7	61.0
1895	47.7	54.2	55.4	59.2	66.3	70.4	76.0	74.0	69.8	64.6	56.3	51.0	62.1
1896	54.2	56.4	58.0	56.0	64.2	73.4	76.8	75.2	70.4	65.4	56.0	54.5	63.4
1897	50.8	49.7	51.2	62.0	66.0	69.0	74.8	77.4	71.3	60.3	56.6	50.2	61.6
1898	46.7	56.2	52.5	63.9	61.8	70.8	76.0	78.6	72.6	64.4	56.2	50.6	62.5
1899	52.7	53.4	54.3	61.2	60.4	70.0	75.3	71.4	75.8	62.4	58.8	54.2	62.5
Mean	50.7	53.0	54.5	60.0	63.7	69.8	74.9	75.3	71.0	63.0	57.0	51.6	62.0

HIGHEST AND LOWEST TEMPERATURE (DEGREES FAHRENHEIT).

Month.	Highest.		Lowest.		Month.	Highest.		Lowest.	
	Date.	Temperature.	Date.	Temperature.		Date.	Temperature.	Date.	Temperature.
January	1898	83	1895	23	August	1898	108	1899	42
February	[a]1896	85	1891	24	September	1899	[d]110	[e]1893	42
March	[b]1893	89	1898	27	October	1899	100	1899	33
April	1898	102	1896	30	November	1898	92	[f]1892	29
May	1896	102	1899	33	December	1895	84	1891	28
June	1898	107	1894	40	Annual		110		28
July	1898	107	[c]1891	47					

[a] Also in 1898.
[b] Also in 1896.
[c] Also in 1893, 1895, 1899.
[d] The cause of high temperature was an approaching thunderstorm, a very unusual occurrence.
[e] Also in 1894.
[f] Also in 1895, 1897.

The daily variations are considerable, averaging 20°, sometimes running as high as 50°. This makes the nights always cool and pleasant, and the greatest variations are in the summer months. While the temperature is pretty high during the middle of the day, yet the dryness of

the atmosphere causes evaporation from the body, so the heat is not oppressive and sunstroke is unknown. Although it is more comfortable in the shade, yet the workmen are not bothered by the heat, as the writer observed some painters at work painting a tin roof without any serious inconvenience with the thermometer standing at 107° in the shade.

The temperature should be compared with the humidity table, which will show how dry the atmosphere is during the hottest part of the day.

The relative humidity was observed for three years, 1892, 1893, 1894. The following table will show the monthly average (per cent) at observations taken at 8 a. m., 12 m., and 8 p. m.:

Month.	Time of observation.			Mean.	Month.	Time of observation.			Mean.
	8 a. m.	12 m.	8 p. m.			8 a. m.	12 m.	8 p. m.	
January	69.6	45.3	67.5	60.8	August	73.2	44.5	65.6	61.1
February	77.9	54.6	77.7	70.1	September	71.6	41.5	68.2	60.4
March	76.5	58.8	79.2	71.5	October	73.3	48.3	74.4	65.3
April	71.8	45.8	74.9	64.1	November	68.7	42.0	69.0	59.9
May	77.1	53.0	76.6	68.9	December	77.2	56.3	72.7	68.9
June	71.8	45.1	68.5	61.8	Annual	72.9	47.8	71.4	64.0
July	65.8	38.7	62.2	55.5					

It will be seen that the mean at 8 a. m. averages 72.9 per cent and 71.4 per cent at 8 p. m., while at noon it averages 47.8 per cent. This explains why invalids should not be out of the house before 8 or 9 a. m. and be in the house before 8 p. m.

The rainfall each year is mostly during the winter months, although there are eight months that average over half an inch, the heaviest fall being in January. Instead of naming the seasons winter and summer, they are called the wet and dry seasons, but the season's rainfall is dated from July 1 and continues until the next June 30.

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1871	6.91	2.21	0.19	0.34	0.11	0.07	0.00	0.04	0.13	0.60	0.88	3.91	15.39
1872	0.00	2.20	0.37	0.79	0.06	0.00	0.00	0.18	0.04	0.00	1.17	4.40	9.21
1873	6.50	1.25	0.51	0.84	0.21	0.00	0.00	1.06	0.02	0.01	0.74	5.73	16.87
1874	5.51	8.76	1.08	0.48	0.42	0.00	0.00	0.00	0.06	1.82	1.88	2.20	22.21
1875	7.20	0.15	0.22	0.07	0.05	0.00	0.00	0.00	0.00	0.00	7.50	0.02	15.21
1876	6.55	1.92	3.41	0.44	0.03	0.03	0.00	0.00	0.00	0.20	0.40	0.00	12.98
1877	3.50	4.03	0.83	0.26	0.30	0.00	0.00	0.00	0.00	0.86	0.50	3.95	14.23
1878	3.33	6.68	2.57	1.71	0.66	0.07	0.07	0.00	0.02	0.14	0.05	4.70	20.00
1879	3.59	1.00	0.50	1.20	0.24	0.03	0.11	0.02	0.01	0.94	3.40	6.50	17.54
1880	1.56	1.33	1.45	5.00	0.04	0.00	0.00	0.00	0.00	0.14	0.67	8.80	18.99
1881	1.40	0.36	1.66	0.46	0.01	0.00	0.00	0.00	0.00	0.80	0.27	0.50	5.46
1882	1.11	2.65	3.30	2.91	0.00	0.00	0.00	0.00	0.00	0.10	0.15	0.45	10.67
1883	1.60	1.10	2.82	2.95	0.00	0.00	0.19	0.00	0.53	0.85	0.09	2.63	12.76
1884	1.63	12.20	9.95	5.68	3.17	0.59	0.00	0.00	0.00	0.00	0.11	3.75	37.08
1885	2.79	0.11	0.28	1.89	1.69	0.19	0.00	0.00	0.00	0.39	4.36	1.20	12.90
1886	6.44	2.52	4.18	2.36	0.32	0.16	0.00	0.00	0.00	0.00	0.11	0.61	16.70
1887	0.39	6.44	4.41	1.90	0.42	0.22	0.11	0.04	0.09	1.17	2.29	1.91	19.39
1888	4.01	3.60	3.41	0.58	0.52	0.03	0.00	0.00	0.00	0.05	4.12	4.64	20.96
1889	0.93	1.50	6.55	2.05	1.13	0.00	0.17	0.63	0.11	2.30	2.23	10.85	28.45
1890	5.44	2.52	0.89	0.00	0.31	0.00	0.13	2.16	0.88	0.58	1.27	3.02	17.20
1891	0.00	7.78	0.06	0.53	1.67	0.00	0.00	0.91	0.93	T.	T.	1.67	13.55
1892	3.24	3.30	1.75	0.37	2.10	0.08	0.00	0.00	0.00	0.16	1.02	2.23	14.25
1893	4.53	3.37	8.00	0.48	0.03	0.00	0.20	0.00	0.05	1.05	0.30	2.28	20.29
1894	1.26	0.88	1.15	0.40	0.56	0.00	0.00	0.16	0.37	0.15	0.60	7.25	12.18
1895	7.39	1.14	3.44	0.64	0.44	0.00	0.00	0.00	0.00	0.00	1.14	0.66	14.85
1896	2.02	0.00	2.92	0.37	1.00	0.00	T.	0.17	0.00	2.10	0.98	1.09	10.65
1897	3.40	5.40	3.41	0.08	0.11	0.00	T.	0.00	0.13	2.10	0.21	0.57	15.41
1898	2.10	0.60	0.97	0.48	1.08	0.00	0.00	0.00	0.00	0.03	0.05	0.44	5.75
1899	2.03	0.51	3.22	0.07	0.19	0.95	0.00	T.	0.01	0.81	1.47	0.84	10.10
Mean	3.32	2.95	2.53	1.22	0.58	0.08	0.03	0.19	0.12	0.60	1.29	2.99	15.59

The following table shows the average clear, fair, and cloudy days; also days on which 0.01 inch or more of rainfall occurred:

Month.	Clear.	Partly cloudy.	Cloudy.	Rainy.	Month.	Clear.	Partly cloudy.	Cloudy.	Rainy.
January	18	6	7	7	August	24	6	1	1
February	17	7	4	5	September	21	8	1	1
March	13	12	6	7	October	19	9	3	2
April	19	9	2	3	November	21	6	3	2
May	19	9	3	2	December	17	10	4	4
June	24	6	0	1	Annual	235	95	35	36
July	23	7	1	1					

The prevailing direction of the wind is from the west and southwest in summer time; it drifts in from the ocean 60 miles away, greatly modifying the temperature. After the sun goes down a gentle breeze comes down from the mountains from the north and east, so that the air is hardly ever stagnant.

During the fall and winter north winds are frequent, but are regarded as beneficial in purifying the atmosphere, the same as thunderstorms in the East.

SANTA CRUZ.

[Data from records of Mr. RALPH SPRINGER and the Southern Pacific Railway Company.]

Santa Cruz, the county seat of Santa Cruz County, is an important city on Monterey Bay, about 80 miles south of San Francisco, in latitude 37° north, longitude 122° 02′ west; elevation about 18 feet above sea level.

The mean annual temperature, based upon records covering twenty-eight years, is 58.2°, or about 2° higher than San Francisco. The warmest month is August, with a mean temperature above 64°, but June, July, and September all have temperatures exceeding 63°. The coolest month in the year is January, with a mean of 51.1°. It is apparent that the temperatures are very equable. The winter months are pleasant.

The average annual precipitation during the past twenty-three years is 26.97 inches, or nearly 4 inches more than the rainfall at San Francisco. December and January are the months of greatest rainfall, and more than half of the annual rainfall occurs during December, January, and February. The annual rainfall has varied from 13 inches to 44 inches. More than 20 inches of rain have fallen during eighteen of the twenty-three years.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1873	56.0	51.9	57.0	58.9	62.4	64.7	68.2	66.0	61.3	58.4	55.3	58.2	59.0
1874	51.6	54.0	55.2	62.0	64.7	66.1	66.6	66.8	65.4	57.1	62.8	50.9	60.3
1875	50.0	54.4	49.5	60.4	65.2	64.4	64.3	68.7	63.3	59.8	58.5	55.7	59.5
1876	54.4	54.9	52.2	58.6	59.2	60.2	61.8	63.0	61.3	59.4	52.8	55.2	57.8
1877	56.4	57.6	60.6	61.7	60.2	63.3	64.3	64.7	63.3	59.8	55.6	52.8	60.0
1878	54.6	55.2	56.1	59.5	61.4	63.8	61.4	59.8	61.1	59.0	53.6	48.5	57.8
1879	46.7	54.9	57.4	57.9	58.8	62.5	64.5	65.5	64.5	60.4	53.2	48.2	57.9
1880	46.3	47.8	49.9	55.4	60.0	62.7	62.7	63.5	61.7	61.3	54.1	54.3	56.6
1881	54.1	57.9	58.2	62.9	63.9	62.9	64.5	66.8	60.8	57.4	54.9	52.1	59.7
1882	48.7	47.0	53.2	55.6	51.4	62.3	64.0	63.7	62.2	60.0	54.1	53.6	56.3
1883	49.1	49.7	56.4	56.8	59.5	65.4	64.7	64.2	65.5	58.7	54.9	54.1	58.2
1884	52.5	53.5	55.7	57.7	62.6	63.9	65.1	66.1	62.6	60.1	56.3	52.7	59.1
1885	52.7	54.5	58.6	60.6	62.4	64.5	66.6	65.6	64.7	62.5	58.4	53.2	60.4
1886	53.6	57.8	53.7	57.8	62.4	66.4	66.6	65.0	59.7	56.7	55.7	54.9	59.2
1887	52.2	49.3	58.2	57.7	59.7	63.9	61.9	62.3	65.1	64.4	55.7	53.0	58.6
1888	49.2	53.1	54.8	59.3	59.3	67.5	66.4	64.4	65.8	66.3	58.0	57.1	60.1
1889	50.9	52.9	56.3	59.7	59.3	63.6	67.1	65.2	67.5	61.9	55.9	55.0	59.4
1890	49.6	52.0	54.5	58.1	62.6	61.9	69.5	68.3	68.1	61.2	57.0	53.1	59.7
1891	49.2	50.6	53.4	54.7	57.8	63.5	63.8	66.2	61.8	58.9	54.7	50.4	57.1
1892	50.5	52.4	53.9	55.4	58.0	60.1	61.8	61.6	61.1	58.0	53.7	49.7	56.4
1893	50.2	49.4	51.9	54.6	58.5	60.5	62.6	63.1	60.8	58.0	56.0	54.0	56.6
1894	48.8	49.4	52.3	58.1	59.2	62.0	63.8	65.4	64.6	61.4	58.7	54.2	58.2
1895	50.8	54.8	54.9	57.2	61.0	62.5	64.1	62.8	64.2	61.2	55.3	50.7	58.3
1896	53.0	55.2	55.0	58.1	57.2	60.6	63.9	64.8	61.3	58.3	52.6	53.4	57.4
1897	49.5	50.2	49.2	57.6	59.3	62.8	61.9	63.0	63.7	55.6	51.7	49.4	56.2
1898	46.0	52.5	51.6	57.4	55.8	63.2	62.0	63.5	62.8	61.2	53.0	48.2	56.4
1899	51.8	50.4	50.6	55.2	53.6	58.6	60.0	62.0	61.3	56.0	55.4	49.6	55.4
1900	53.0	52.4	55.8	53.8	59.4	62.1	60.7	62.8	62.4	57.8	55.5	50.2	57.2
Mean (28 years)	51.1	52.7	54.5	57.8	59.8	63.1	63.9	64.5	63.1	59.7	55.5	52.4	58.2

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	10.56	14.71	4.04	2.06	0.00	0.00	0.00	0.00	1.27	2.75	0.30	1.34	37.03
1879	4.79	4.42	3.64	2.14	1.41	0.05	0.00	0.00	1.06	3.76	2.50	23.77	
1880	1.44	1.04	2.12	5.60	0.70	0.00	0.00	0.00	0.00	0.00	0.40	12.59	23.89
1881	9.38	3.28	1.74	2.26	0.00	0.99	0.00	0.00	0.39	1.64	0.96	5.58	26.22
1882	3.08	3.04	5.57	2.26	0.24	0.07	0.00	0.00	0.65	2.47	2.28	1.41	21.07
1883	3.57	0.76	3.65	1.68	3.18	0.02	0.00	0.00	0.54	1.42	0.95	1.07	16.79
1884	3.30	5.27	8.76	6.78	0.11	2.48	0.00	0.10	0.33	1.37	0.32	8.91	37.73
1885	2.11	0.41	0.47	2.43	0.05	0.00	0.08	0.00	0.07	0.10	10.25	2.90	18.87
1886	7.60	0.80	3.05	7.60	0.30	0.00	0.00	0.00	0.00	0.79	1.10	2.20	23.44
1887	1.01	9.62	0.53	1.90	0.02	0.00	0.00	0.00	0.42	0.42	1.21	4.58	19.71
1888	8.00	1.93	4.61	0.57	1.08	0.09	0.00	0.00	0.37	0.00	6.17	5.07	27.89
1889	0.99	1.37	6.76	0.84	1.78	0.00	0.00	0.00	0.00	9.50	2.64	20.38	44.26
1890	9.40	4.90	5.58	1.06	1.22	0.00	0.00	0.00	0.80	0.00	0.00	2.34	25.30
1891	0.77	10.68	1.35	2.57	0.60	0.10	0.00	0.00	0.70	0.45	0.58	8.10	25.90
1892	1.40	4.60	2.82	1.83	3.95	0.00	0.00	0.00	0.25	0.93	5.05	7.15	27.98
1893	5.30	4.25	9.95	1.65	0.36	T.	0.00	0.00	0.25	0.75	4.40	3.50	30.41
1894	7.02	8.60	1.64	0.66	2.36	0.72	0.01	T.	2.77	3.59	0.40	13.71	41.48
1895	9.11	4.07	3.08	2.02	1.15	0.00	0.00	0.00	0.18	0.49	1.89	2.15	24.14
1896	8.52	0.25	3.69	3.07	1.66	T.	0.05	0.73	0.35	1.88	6.79	4.87	31.86
1897	3.72	4.96	4.86	0.22	0.24	0.10	0.00	T.	0.17	1.49	0.54	2.13	18.43
1898	2.17	2.67	1.39	0.52	1.35	0.06	0.00	T.	2.21	0.40	0.86	2.24	13.87
1899	7.27	0.45	9.31	1.21	0.95	0.14	0.00	0.05	0.00	7.05	3.70	4.42	34.55
1900	5.49	0.99	3.58	2.21	0.94	T.	T.	T.	0.13	2.11	7.87	2.48	25.80
Average (23 years)	5.04	4.05	4.01	2.31	1.03	0.21	0.01	0.04	0.52	1.77	2.71	5.29	26.97

STOCKTON.

The city of Stockton, latitude 37° 52′, longitude 121° 18′ west, lies about 60 miles east of San Francisco. As the center of the great wheat belt of California, a record of the temperature and rainfall conditions is of the highest importance. Rainfall data covering a period of forty-nine years are available, but it is not known definitely to whom credit should be given for these records. On the books of the Weather Bureau are found the names of Dr. R. R. Reed, W. M. Trivett, M. Walthal, and T. G. Brown. Doubtless there are others to whom credit should be given.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT), 1871–1900.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1871	46.9	49.2	57.0	60.1	64.6	74.4	73.5	74.7	70.7	63.5	52.5	49.2	61.4
1872	49.1	54.1	56.6	57.3	67.7	72.6	75.6	77.7	71.2	64.4	54.2	46.5	62.2
1873	51.8	47.7	57.7	58.3	63.6	69.6	76.1	72.0	72.2	58.3	56.5	47.1	60.9
1874	46.0	48.6	52.4	59.7	65.7	71.8	77.7	74.3	75.2	68.8	57.3	47.0	62.0
1875	48.4	54.0	54.4	62.6	71.7	72.8	74.2	72.5	70.6	69.9	56.6	50.0	63.1
1876	45.1	50.5	55.2	60.6	65.0	77.3	75.6	72.0	69.9	63.5	53.5	45.5	61.1
1877	48.2	54.9	61.5	62.9	67.2	71.9	77.6	75.6	72.8	62.0	55.8	48.9	63.3
1878	48.3	50.9	54.1	56.7	62.0	69.0	72.5	69.2	67.6	60.5	53.6	46.0	59.2
1879	44.1	54.0	56.6	57.1	58.1	70.2	71.0	74.1	68.2	60.0	50.2	45.4	59.1
1880	44.4	45.4	48.8	54.2	60.6	65.1	70.5	67.6	70.0	62.0	49.0	50.0	57.6
1881	48.7	53.7	57.7	63.6	67.4	65.7	70.9	68.0	67.2	56.7	50.9	44.2	59.6
1882	43.0	47.0	54.0	60.4	66.5	67.8	74.2	74.2	68.6	55.5	50.0	48.2	59.1
1883	43.2	46.1	54.8	52.8	61.0	70.0	72.3	70.6	72.0	56.0	46.9	46.0	57.6
1884	46.4	45.9	53.1	57.8	63.1	64.1	69.9	71.6	63.0	59.4	54.7	48.6	58.1
1885	47.9	53.5	57.8	61.3	64.0	67.1	69.4	73.1	68.4	62.6	55.3	50.8	60.9
1886	48.1	54.1	53.1	57.4	63.8	72.0	74.6	73.1	68.2	59.0	51.0	50.9	60.4
1887	48.5	45.9	58.0	59.5	64.0	68.2	70.3	68.4	68.5	63.9	53.4	46.7	59.6
1888	44.3	51.1	53.6	62.3	62.0	68.1	71.1	74.9	72.3	62.2	53.3	49.6	60.4
1889	45.1	49.2	55.3	60.5	62.9	70.9	72.3	73.2	74.7	64.9	62.2	55.6	62.3
1890	46.2	50.2	51.6	59.3	67.8	70.9	74.1	76.0	56.3	64.0	63.9	45.0	60.4
1891	47.1	47.4	55.3	62.1	65.4	71.5	79.6	77.0	71.6	65.5	56.1	47.4	62.2
1892	47.0	52.1	54.4	55.7	63.9	66.8	71.1	72.4	67.4	60.6	53.8	47.4	59.4
1893	42.5	47.8	52.6	55.6	64.2	68.4	74.3	73.4	64.7	58.0	53.0	48.0	58.5
1894	44.1	46.2	52.2	60.0	63.6	64.4	73.0	73.0	70.0	61.7	55.6	46.4	59.2
1895	45.6	52.2	53.2	57.8	62.6	71.4	71.3	71.7	65.2	63.0	50.8	43.9	58.2
1896	49.2	52.8	55.4	53.4	59.8	70.3	75.2	71.2	66.7	63.0	50.9	48.2	59.7
1897	48.6	43.6	51.4	64.6	70.5	73.9	75.0	71.2	68.1	59.2	49.3	43.6	59.9
1898	40.5	51.8	51.2	61.3	60.5	69.4	69.4	71.4	67.9	61.4	51.6	42.0	58.2
1899	48.3	50.4	52.6	57.8	58.6	71.0	72.1	67.2	71.2	59.4	53.8	43.6	58.8
1900	47.2	50.1	54.8	52.8	63.8	69.3	73.7	72.8	69.2	63.4	60.2	42.8	60.0
Mean	46.5	50.0	54.5	58.9	64.1	69.9	72.6	72.5	69.0	61.7	53.9	47.1	60.1

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS), 1850–1900.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1850	4.50	0.50	10.00	4.25	0.25	0.00	0.00	0.00	0.00	0.00	T.	T.	19.50
1851	0.65	0.35	1.88	1.14	0.69	0.00	0.00	0.00	1.00	0.18	2.14	7.07	15.10
1852	0.58	0.12	6.40	0.19	0.30	0.00	0.00	0.00	T.	0.00	6.00	13.41	27.00
1853	2.40	0.62	2.02	2.70	0.25	0.00	0.00	0.00	0.00	0.00	0.61	1.35	9.95
1854	2.64	8.94	3.60	3.24	0.66	0.00	0.00	0.00	0.00	0.13	0.31	0.23	19.75
1855	2.90	2.74	2.20	3.29	0.00	0.00	0.00	0.00	0.00	0.00	0.74	2.42	14.29
1856	4.50	0.02	0.26	0.16	0.17	0.00	0.10	0.00	0.00	0.45	0.83	2.90	9.39
1857	1.38	4.80	0.68	T.	T.	0.35	0.00	T.	0.00	0.66	2.41	6.63	16.91
1858	2.44	2.46	2.88	1.21	0.20	0.10	0.00	T.	T.	3.01	0.15	4.33	16.78
1859	0.96	3.91	1.64	0.98	1.04	0.00	0.03	0.00	0.02	0.00	6.48	1.83	16.89
1860	2.31	0.93	5.11	2.87	2.49	0.11	0.55	0.00	0.06	0.91	0.18	4.28	19.80
1861	2.67	2.92	3.32	0.48	0.59	0.14	0.00	0.00	0.00	T.	2.17	8.64	20.93
1862	15.04	4.26	2.80	0.82	1.81	0.01	0.00	0.01	0.00	0.36	0.01	2.33	27.45
1863	1.73	2.75	2.36	1.69	0.36	0.00	0.00	0.00	T.	0.00	1.49	1.82	12.20
1864	1.08	0.18	1.30	1.08	0.74	0.09	0.00	0.08	T.	0.12	6.72	7.87	19.26
1865	4.78	0.71	0.48	1.37	0.46	0.00	T.	0.00	0.08	0.48	2.43	0.36	11.15
1866	7.70	2.01	2.02	0.48	2.25	0.10	0.02	0.00	0.00	T.	2.43	9.51	26.52
1867	3.44	7.10	1.01	1.80	0.01	0.00	0.00	0.00	0.03	0.62	2.16	6.48	22.65
1868	5.07	2.28	3.51	0.56	0.00	0.00	0.00	0.00	0.00	0.13	0.62	3.45	15.62
1869	4.18	3.17	2.49	1.59	0.82	0.00	0.00	0.00	0.00	1.05	0.83	1.55	15.68
1870	0.37	2.35	0.99	0.07	0.12	0.31	0.00	0.00	0.00	0.15	0.67	1.35	6.38
1871	1.47	1.70	0.30	0.69	0.40	T.	T.	0.00	0.00	0.14	1.09	11.49	17.28
1872	2.58	3.46	1.43	0.51	0.06	0.04	0.00	0.00	0.00	0.03	1.37	6.25	15.73
1873	0.75	3.97	0.47	0.44	0.00	0.00	0.03	0.00	0.00	0.31	0.76	3.94	10.67
1874	3.94	1.78	3.33	0.50	0.58	0.00	0.00	0.00	0.23	1.09	3.45	0.23	15.19
1875	4.54	0.28	0.87	0.00	0.00	0.45	0.00	0.00	0.00	0.01	5.86	2.85	14.86
1876	3.26	2.65	3.23	0.40	0.00	0.00	0.07	0.00	0.00	2.11	0.30	0.00	12.02
1877	3.32	0.23	0.75	0.00	0.32	0.00	0.00	0.00	0.00	0.36	0.72	1.31	7.01
1878	5.45	6.70	2.56	1.01	0.65	0.00	0.00	0.00	0.00	0.34	0.51	0.42	17.64
1879	2.28	2.94	2.06	1.75	0.96	0.20	0.00	0.00	0.00	0.58	2.05	1.67	14.49
1880	1.54	1.32	0.89	6.28	1.01	0.00	0.00	0.00	0.00	0.00	0.04	7.09	18.17
1881	2.83	2.50	0.82	1.11	0.29	0.00	0.00	0.00	T.	0.24	0.73	1.65	10.17
1882	1.27	0.84	2.64	2.21	0.00	0.11	0.00	0.00	0.50	1.86	1.11	0.27	10.81
1883	2.55	0.35	2.55	1.23	4.84	0.00	0.00	0.00	0.18	0.93	0.51	1.00	14.14
1884	1.94	4.43	6.66	2.94	0.50	1.27	0.00	0.00	0.19	1.40	0.00	5.69	25.02
1885	1.23	0.00	0.26	0.77	0.00	0.05	0.00	0.03	0.00	0.00	6.08	1.24	9.66
1886	5.36	0.04	1.21	3.43	0.00	0.00	0.00	0.00	0.00	0.22	0.84	0.82	11.92
1887	0.36	3.78	0.21	1.57	0.00	0.03	0.00	0.00	0.27	0.00	0.52	3.06	9.80
1888	3.36	0.48	2.29	0.28	0.55	0.00	0.00	0.00	0.88	0.00	2.70	2.42	12.96
1889	0.31	0.98	3.98	0.14	1.52	0.06	0.00	0.00	0.00	3.39	3.27	6.17	19.82
1890	4.99	1.66	1.26	1.08	0.55	0.00	0.00	0.00	0.57	0.00	0.00	2.31	12.42
1891	0.95	3.19	1.14	1.58	0.30	0.05	0.00	0.00	0.20	0.05	0.07	4.58	12.11
1892	0.95	1.25	2.50	0.81	1.44	0.36	0.00	T.	0.08	0.79	3.66	2.99	14.83
1893	2.68	2.14	2.59	0.96	0.00	0.00	T.	0.00	0.13	0.00	2.38	1.42	12.30
1894	3.88	4.93	0.45	0.10	1.84	0.70	0.00	0.00	1.76	1.32	0.56	6.80	22.34
1895	5.24	1.70	1.00	0.63	0.77	0.00	0.00	0.00	0.50	0.26	1.09	1.20	12.39
1896	6.09	0.19	1.76	2.65	0.96	0.00	T.	0.19	T.	1.11	2.30	1.12	16.37
1897	1.81	2.85	2.78	0.37	0.09	T.	0.00	0.01	0.03	1.37	0.39	1.23	10.93
1898	0.61	1.32	0.84	T.	1.11	0.03	0.00	0.00	0.35	0.88	0.56	1.50	7.20
1899	3.15	0.18	6.58	0.53	0.47	0.20	0.00	0.05	0.00	3.59	2.90	1.83	19.48
1900	2.39	0.24	1.73	1.74	1.82	0.00	0.00	0.00	0.04	0.97	4.65	1.08	14.66
Mean	2.99	2.18	2.28	1.29	0.67	0.09	0.02	0.01	0.14	0.62	1.76	3.36	15.40

TRUCKEE.

[Data from records of Southern Pacific Railway Company.]

Truckee is situated in Nevada County, about 8 miles southwest of Boca, in latitude 39° 20′ north, longitude 120° 11′ west. Trout Creek joins the Truckee River at this point. Donner Lake lies about 2 miles west of Truckee, just north of the boundary line between Nevada and Placer counties. The elevation of Truckee is 5,818 feet, and of Donner Lake 6,095 feet. The general movement of the air is from the southwest down the Truckee Valley, but owing to the topography of the country there are many local air movements. Killing frosts occur frequently, as at Boca, and low temperatures prevail during the winter months. The mean annual temperature at Truckee, based upon records covering thirty years, is 43.9°, and is almost identical with that of Boca for the same period. Truckee is somewhat warmer in July than Boca, and a little colder in the winter months. The average annual precipitation, based upon records covering thirty-one years, is 26.60 inches. The month of heaviest precipitation is January, with an average of 5.61 inches. The snowfall for the past four years is as follows: 1897, 218 inches; 1898, 110 inches; 1899, 246 inches; 1900, 132 inches.

MONTHLY AND ANNUAL MEAN TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1871	24.6	28.3	32.0	39.0	44.2	56.0	73.1	67.1	61.2	44.1	32.8	27.1	44.1
1872	23.6	25.1	28.3	25.7	37.6	49.0	53.0	53.0	50.5	38.7	33.3	29.9	37.3
1873	32.9	24.4	33.9	38.8	46.3	55.8	65.8	52.5	54.9	41.1	36.6	24.2	42.3
1874	21.7	22.6	26.3	36.3	46.6	53.3	67.6	59.3	58.0	45.8	35.7	28.7	41.8
1875	26.9	27.7	32.0	45.0	51.7	56.4	66.7	63.0	56.3	50.4	38.0	32.2	45.5
1876	22.8	28.1	30.7	38.6	45.9	60.0	62.6	60.3	54.3	45.5	37.6	31.6	43.2
1877	27.6	33.9	42.0	40.2	45.6	57.4	66.6	62.5	58.9	41.5	39.7	30.6	45.5
1878	29.5	30.4	36.6	42.0	57.7	63.3	65.7	67.8	58.1	47.1	40.8	29.8	47.4
1879	25.1	34.8	36.3	40.5	46.1	61.7	66.8	66.5	60.9	43.5	33.1	22.9	44.8
1880	21.8	21.8	25.9	35.3	46.0	58.9	68.2	63.4	57.6	48.5	30.3	33.1	42.6
1881	29.4	34.6	35.9	50.0	54.6	60.0	66.1	61.1	55.6	42.6	29.0	28.6	45.6
1882	22.0	22.7	28.1	34.4	51.1	58.0	69.9	66.6	55.8	44.8	35.8	32.1	43.4
1883	22.9	21.4	36.7	39.7	47.7	61.9	68.1	61.8	57.8	43.5	33.9	29.8	43.8
1884	25.6	21.8	29.5	39.7	50.8	56.0	63.2	65.6	52.3	44.1	37.3	28.1	42.8
1885	27.6	34.8	39.9	42.8	49.8	52.8	62.2	61.5	53.8	46.8	36.7	31.5	45.0
1886	25.6	32.7	29.7	38.4	51.5	58.3	64.9	61.8	52.3	39.1	32.0	35.9	43.5
1887	29.1	24.0	38.2	38.5	50.0	57.5	62.9	60.0	52.1	46.4	37.8	25.1	43.5
1888	20.2	29.6	33.6	46.5	51.6	56.0	67.3	64.9	61.6	50.6	40.0	34.0	46.3
1889	23.1	31.5	41.1	50.3	54.5	70.5	69.3	69.2	61.1	46.3	39.4	29.7	48.8
1890	21.7	25.1	30.8	38.8	47.2	56.4	71.3	64.9	56.6	47.1	37.0	26.7	43.6
1891	25.4	27.8	33.9	40.8	49.6	56.5	66.0	66.4	53.1	45.9	38.4	23.7	44.0
1892	26.6	32.1	33.4	37.2	48.2	53.8	60.3	66.0	61.2	43.2	38.3	23.7	43.7
1893	28.4	25.1	30.4	34.9	45.4	57.0	61.4	66.2	50.6	47.3	37.2	28.5	42.7
1894	23.2	23.7	31.0	41.7	47.4	48.2	65.5	65.6	58.3	46.7	38.8	25.7	43.0
1895	22.7	26.3	30.5	38.4	46.3	55.7	61.8	62.9	51.6	47.6	36.2	26.6	42.2
1896	27.4	30.8	34.3	34.2	43.7	60.8	68.6	63.6	54.6	47.4	35.8	34.0	44.6
1897	25.9	25.5	25.7	40.3	56.3	58.5	63.6	63.2	53.8	41.6	39.4	26.0	43.3
1898	16.4	32.6	33.0	45.2	46.2	59.0	71.4	73.2	60.4	43.2	33.0	21.5	44.6
1899	29.1	39.0	35.1	40.8	44.0	56.1	62.8	63.5	49.5	48.4	43.4	26.4	44.8
1900	30.6	31.5	33.4	46.0	48.6	55.7	60.4	58.2	53.3	43.0	37.4	32.1	44.2
Means (30 years)	25.3	28.3	32.9	40.0	48.4	57.4	65.4	63.4	55.9	45.1	36.5	28.7	43.9

MONTHLY AND ANNUAL PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1870	5.90	6.18	4.35	0.12	2.40	0.80	1.80	0.05	0.00	0.00	0.51	1.67	23.28
1871	4.80	4.23	3.15	2.00	0.28	0.42	0.00	0.00	0.20	0.02	5.35	16.23	36.71
1872	3.42	10.49	3.63	4.11	0.60	0.30	0.00	0.00	0.00	0.40	0.60	3.74	27.39
1873	3.78	9.55	1.69	1.86	0.55	0.00	T.	0.00	0.00	0.11	0.42	8.70	26.16
1874	9.54	6.15	9.35	2.61	0.68	0.11	0.56	0.07	0.04	2.44	3.54	0.60	35.69
1875	8.50	0.20	1.20	0.90	0.00	1.81	0.40	0.03	T.	0.62	8.94	4.90	27.50
1876	9.85	5.50	6.95	1.83	0.84	0.01	0.05	0.03	0.03	3.64	0.07	0.05	28.85
1877	9.45	0.39	1.84	1.03	1.12	0.36	0.00	0.00	0.04	0.00	1.66	0.24	16.13
1878	5.97	11.80	2.07	0.80	1.17	0.10	0.00	0.28	0.23	0.75	2.14	0.50	25.81
1879	7.70	2.68	5.25	1.55	0.45	0.00	0.00	0.00	0.07	1.40	3.78	4.98	27.86
1880	2.95	4.65	4.65	12.74	2.50	0.00	0.16	0.00	0.00	0.00	0.45	9.51	37.61
1881	5.71	2.13	1.86	0.49	0.40	1.26	0.18	0.00	0.25	2.50	2.70	3.80	21.28
1882	6.40	4.95	12.05	1.89	0.85	0.98	0.60	0.00	0.00	0.85	1.04	0.80	30.41
1883	1.55	3.05	1.65	2.19	1.13	0.00	0.53	0.00	0.12	2.46	2.50	1.62	16.80
1884	6.65	11.20	5.38	3.90	0.14	1.02	0.00	0.10	0.78	1.50	0.00	13.14	43.81
1885	1.80	0.54	0.56	2.04	0.08	0.00	0.00	0.25	0.47	0.00	6.95	2.22	14.91
1886	7.08	0.50	2.90	1.78	0.60	0.56	0.89	0.00	T.	0.85	1.10	2.29	18.55
1887	3.43	12.25	0.36	2.00	2.04	0.37	0.40	T.	0.00	0.00	0.30	4.80	25.95
1888	2.35	0.00	0.00	T.	0.70	0.80	0.72	0.20	0.25	0.00	0.10	1.58	6.70
1889	0.80	1.40	2.51	1.01	4.51	0.00	0.00	0.00	0.00	3.13	3.29	14.39	31.04
1890	16.20	8.90	7.29	0.20	1.44	0.00	0.00	0.22	0.80	0.45	0.00	3.70	39.20
1891	1.22	8.36	3.92	2.17	2.90	0.46	0.00	0.00	0.98	0.05	0.45	6.34	26.85
1892	2.65	2.80	3.00	2.96	4.20	0.95	0.00	0.00	0.29	0.37	5.73	8.15	31.10
1893	5.44	8.02	5.18	3.73	1.79	0.00	0.00	0.00	1.22	0.35	3.96	2.82	32.51
1894	8.06	10.95	2.65	2.15	1.05	T.	0.00	0.00	0.13	1.12	0.60	13.95	40.66
1895	11.73	1.92	1.72	0.50	2.40	0.00	0.00	0.00	1.32	0.34	0.50	2.96	23.39
1896	7.07	0.40	4.67	9.36	0.54	0.00	0.15	0.34	0.32	0.40	3.86	2.50	29.61
1897	2.35	7.97	9.50	0.30	T.	0.18	0.00	0.00	T.	0.55	3.20	3.15	27.20
1898	1.05	3.65	2.05	0.25	0.30	0.00	0.00	0.00	0.40	0.06	2.95	1.50	12.21
1899	7.80	2.70	9.50	1.10	0.75	0.00	0.00	0.92	0.00	6.49	2.80	1.80	33.86
1900	2.63	0.80	4.20	1.90	0.80	1.01	0.00	0.00	0.00	1.02	2.50	2.70	17.56
Average (31 years)	5.61	4.98	4.04	2.22	1.20	0.37	0.19	0.08	0.26	1.08	2.32	4.30	26.98

CLIMATE OF VISALIA.

[From records of Mr. L. V. Nanscawen.]

These records were kept by Mr. L. V. Nanscawen, and cover the period from January 1, 1888, to July 31, 1898.

TEMPERATURE.

Year.	Number of days with maximum temperature above 90°.					Number of days with minimum temperature below 35°.				Number of days with minimum temperature below 40°.		
	May.	June.	July.	Aug.	Sept.	Nov.	Dec.	Jan.	Feb.	Oct.	Mar.	Apr.
1888	7	20	31	31	18	2	11	13	9	0	31	12
1889	10	25	31	24	18	8	12	17	6	7	9	3
1890	6	11	28	26	9	0	13	17	5	3	23	10
1891	1	8	26	27	9	1	10	14	10	0	21	17
1892	8	5	23	22	4	0	9	5	1	4	21	16
1893	0	9	26	26	3	6	9	21	4	4	21	24
1894	2	4	30	26	9	5	5	18	4	2	22	5
1895	4	18	18	23	3	7	24	4	3	0	22	11
1896	4	18	24	23	8	6	12	11	3	0	8	6
1897	7	11	21	24	11	15	26	11	10	8	18	2
1898	5	15	31	.....	.....	.....	.....	29	10	.....	27	7

WEATHER.

Month.	Average number days—				Month.	Average number days—			
	Clear.	Partly cloudy.	Cloudy.	Rainy.		Clear.	Partly cloudy.	Cloudy.	Rainy.
January	11	5	15	6	August	20	6	5	0
February	12	2	14	5	September	20	5	5	1
March	12	4	15	6	October	19	4	8	2
April	16	3	11	3	November	15	5	10	2
May	19	5	7	2	December	8	5	18	8
June	22	3	5	0	Annual	196	52	117	35
July	22	5	4	0					

GREATEST PRECIPITATION IN 24 HOURS FOR EACH MONTH.

[Inches and hundredths.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Greatest annual.
1888	1.86	0.15	0.84	0.14	0.00	0.00	0.00	0.00	0.35	0.00	1.46	0.62	1.86
1889	0.42	0.24	0.89	0.27	0.70	0.00	0.00	0.00	T.	2.11	0.22	0.70	2.11
1890	1.64	0.41	0.43	0.17	0.29	0.00	0.00	T.	0.40	0.00	0.47	0.89	1.64
1891	0.46	0.60	0.21	1.05	0.07	0.04	0.00	0.00	1.10	0.00	0.34	1.54	1.54
1892	0.20	0.57	0.76	0.35	0.50	0.18	0.00	0.00	T.	0.37	0.35	0.92	0.92
1893	0.47	1.26	1.47	0.26	0.00	0.00	T.	0.00	0.00	0.00	0.13	0.64	1.47
1894	0.59	0.22	0.91	0.21	0.34	1.42	0.00	0.00	0.45	0.28	0.10	1.33	1.42
1895	1.32	1.22	0.41	0.24	0.43	0.00	T.	T.	0.04	0.45	0.64	0.40	1.32
1896	1.12	0.04	0.46	0.50	0.11	0.00	0.22	0.10	0.00	0.88	0.92	0.35	1.12
1897	1.00	0.54	0.67	0.39	T.	T.	T.	0.00	0.40	0.35	0.40	0.45	1.00
1898	0.22	0.39	0.48	0.06	0.71	0.00	T.	.....	.....	.....	.....	.....	.....
Greatest	1.86	1.26	1.47	1.05	0.71	1.42	0.22	0.10	1.10	2.11	1.46	1.54	.....
Date	3, 1888	9, 1893	20, 1893	16, 1891	15, 1898	5, 1894	22, 1896	29, 1896	15, 1891	28, 1889	16, 1888	29, 1891	.....
Year													

MEAN MONTHLY AND ANNUAL TEMPERATURE (DEGREES FAHRENHEIT).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1888	37.0	45.6	46.7	62.1	68.8	77.8	85.4	84.7	79.5	65.0	52.4	45.4	62.1
1889	42.9	50.0	57.5	62.8	68.9	81.2	83.9	81.4	76.4	57.9	49.5	45.6	63.2
1890	39.9	47.0	51.5	57.6	67.8	72.9	80.2	78.2	71.7	62.3	53.8	43.4	60.5
1891	44.4	46.8	51.1	56.1	65.0	71.8	83.0	81.4	69.4	64.5	52.9	43.8	60.9
1892	46.6	50.4	51.4	54.5	64.4	67.2	79.0	78.4	68.9	61.8	54.1	45.1	60.2
1893	42.0	47.2	49.4	51.1	64.7	72.8	79.3	78.9	64.9	57.8	50.0	47.0	58.8
1894	43.0	46.9	51.7	60.6	67.0	67.3	82.3	79.6	71.0	61.0	54.4	46.5	61.0
1895	46.2	51.3	50.3	58.7	67.2	75.5	77.1	76.4	68.2	64.8	48.4	40.9	60.4
1896	49.7	53.1	58.0	54.0	64.4	77.4	83.3	78.0	71.7	67.2	48.7	47.7	63.6
1897	45.0	48.6	48.9	62.0	69.2	71.3	78.6	78.4	70.9	59.2	50.5	41.0	60.3
1898	39.4	51.1	50.6	62.5	63.3	73.4	81.4	.....	.....	.....	.....	.....	.....
Mean	43.3	48.9	51.6	58.4	66.4	73.5	81.2	79.5	71.3	62.2	51.5	44.6	61.1

SUMMARY OF MONTHLY MEANS AND EXTREMES OF TEMPERATURE.

Month.	Highest monthly mean.		Lowest monthly mean.		Absolute maximum.		Absolute minimum.		Greatest daily range.	Mean daily range.	Mean of 3 consecutive warmest days.	Mean of 3 consecutive coldest days.
	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.				
January	1896	49.7	1888	37.0	15, 1893	67	16, 1888 26, 1898	17	40	18.4	57.3	23.2
February	1896	53.1	1888	45.6	24, 1896	78	22, 1897	23	40	22.2	60.3	38.7
March	1896	56.0	1888	46.7	25, 1896	83	22, 1898	22	44	26.1	70.3	39.7
April	1889	62.8	1898	51.1	25, 1898	104	(a)	30	55	29.5	80.3	45.5
May	1897	69.2	1898	63.3	22, 1892	101	3–5–6, 1892	35	47	30.1	83.0	50.7
June	1889	81.2	1892	67.2	30, 1891 25, 1898	107	9, 1892	38	52	31.1	90.0	52.3
July	1888	85.4	1895	77.1	27, 1898	113	3, 1895	50	49	31.1	90.3	67.2
August	1888	84.7	1895	76.4	28, 1888	107	26–29–30, 1895	51	39	30.7	91.3	66.3
September	1888	79.5	1893	64.9	1, 1888	106	30, 1894	37	42	30.1	91.0	52.7
October	1896	67.2	1893	57.8	4, 1889 2–4, 1896	92	30, 1889	34	39	27.7	74.0	51.0
November	1894	54.4	1895	48.4	19, 1897	80	(b)	23	46	26.5	60.7	34.3
December	1896	47.7	1897	41.0	10, 1896	70	5–20, 1897	19	39	19.7	53.0	34.5
Annual	1888	85.4	1888	37.0	July 27, 1898	113	Jan. 16, 1888 Jan. 26, 1898	17	55	26.5	.....	.....

a Several years and dates. b Several dates in 1896 and 1897.

MONTHLY, ANNUAL, AND SEASONAL PRECIPITATION (INCHES AND HUNDREDTHS).

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.	Season of.	Seasonal.
1888	3.06	0.16	1.61	0.14	0.00	0.00	0.00	0.00	0.35	0.00	2.39	1.70	9.41	.....	.....
1889	0.71	0.36	3.46	0.49	1.22	0.00	0.00	0.00	T.	4.08	0.66	3.21	14.19	1888–89	10.68
1890	3.34	1.12	1.10	0.25	0.46	0.00	0.00	T.	0.73	0.00	0.51	2.36	9.87	1889–90	14.22
1891	0.57	2.85	0.66	1.36	0.07	0.04	0.00	0.00	1.10	0.00	0.34	3.46	10.45	1890–91	9.15
1892	0.25	1.79	3.01	0.54	1.64	0.18	0.00	0.00	T.	0.39	0.61	2.17	10.58	1891–92	12.31
1893	1.28	1.78	3.61	0.43	0.00	0.00	T.	0.00	0.00	0.00	0.13	1.38	8.61	1892–93	10.27
1894	1.90	1.03	1.25	0.21	0.48	1.42	0.00	0.00	0.50	0.35	0.10	3.75	10.99	1893–94	7.80
1895	4.30	1.68	1.61	0.65	0.47	0.00	T.	T.	0.08	0.45	0.64	0.61	10.49	1894–95	13.41
1896	3.02	0.04	0.99	1.33	0.23	0.00	0.40	0.10	0.00	0.92	1.08	0.85	8.96	1895–96	7.39
1897	3.51	2.11	1.93	0.39	T.	T.	T.	0.00	0.40	0.64	0.48	0.96	10.42	1896–97	11.29
1898	0.54	0.96	0.74	0.06	0.73	0.00	.....	.....	.....	.....	.....	.....	.....	1897–98	5.53
Mean	2.04	1.26	1.82	0.53	0.48	0.15	0.04	0.01	0.32	0.68	0.69	2.04	10.40	.....	10.20

EXTREMES OF PRECIPITATION.

Month.	Greatest monthly precipitation.		Least monthly precipitation.		Month.	Greatest monthly precipitation.		Least monthly precipitation.	
	Date.	Amount.	Date.	Amount.		Date.	Amount.	Date.	Amount.
January	1895	4.30	1892	0.25	July	1896	0.40	(a)	0.00
February	1891	2.85	1896	0.04	August	1896	0.10	(a)	0.00
March	1893	3.61	1891	0.66	September	1891	1.10	1893 1896	0.00
April	1891	1.36	1898	0.08	October	1889	4.08	(a)	0.00
May	1892	1.64	1888 1893	0.00	November	1888	2.39	1894	0.10
June	1894	1.42	(a)	0.00	December	1894	3.75	1895	0.61

a In many years.

TOTAL NUMBER OF DAYS WITH PRECIPITATION.

Month.	Less than 0.01 inch.	0.01 to 0.10 inch.	0.11 to 0.25 inch.	0.26 to 0.50 inch.	0.51 to 1 inch.	Over 1 inch.	Month.	Less than 0.01 inch.	0.01 to 0.10 inch.	0.11 to 0.25 inch.	0.26 to 0.50 inch.	0.51 to 1 inch.	Over 1 inch.
January	8	14	19	16	9	3	July	4	1	2	0	0	0
February	4	14	20	13	4	1	August	2	1	0	0	0	0
March	7	19	16	20	11	0	September	10	4	0	5	0	1
April	7	10	12	6	0	0	October	8	4	3	5	3	1
May	6	8	4	6	3	0	November	1	7	6	7	2	1
June	2	1	1	0	0	1	December	8	23	23	19	16	1

NORMAL MONTHLY AND ANNUAL TEMPERATURE (DEGREES FAHRENHEIT).

Stations.	Elevation.	Length of record.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
	Feet.	*Years.*													
Anaheim	134	23	54.8	56.2	59.2	62.8	66.7	69.8	72.4	73.3	71.9	66.6	61.1	56.9	64.3
Angiola	208	1													
Antioch	46	22	46.5	50.8	54.4	59.7	66.1	72.0	75.8	74.5	71.1	63.4	53.8	48.3	61.4
Aptos	102	16	48.5	49.5	52.3	54.9	58.8	62.5	62.3	61.4	60.9	57.8	53.0	49.7	56.0
Azusa	616														
Bakersfield	404	12	48.1	52.4	57.9	64.7	72.9	81.9	88.6	84.7	75.8	66.0	55.9	48.2	66.4
Berkeley	320	14	47.6	49.7	51.7	54.0	57.3	60.9	61.0	60.9	61.3	58.9	54.6	48.9	55.6
Biggs	98	2													
Bishop	4,450	17	38.2	44.9	51.0	61.1	69.3	77.7	84.6	81.0	71.3	60.6	49.4	40.9	60.3
Blue Canyon	4,695	2													
Bodie	8,248	6	20.2	23.0	25.3	33.8	41.8	51.9	57.6	54.4	47.0	37.7	30.1	20.8	37.1
Bowman's Dam	5,500														
Byron	33	21	46.4	50.4	56.4	61.5	67.1	75.5	80.9	77.5	71.8	63.3	53.9	47.8	62.8
Cabazon	1,779	5	51.0	54.7	56.1	62.2	65.0	75.6	82.9	79.1	75.5	67.5	62.6	54.0	65.7
Caliente	1,290	25	49.4	51.8	56.0	60.9	70.0	78.9	84.8	83.1	75.0	64.8	55.2	49.7	65.0
Calistoga	363	29	48.1	50.1	53.5	57.8	61.5	69.6	72.6	70.3	66.7	60.0	53.4	49.2	59.6
Campbell	194	4													
Cedarville	4,675	7	31.5	34.9	37.3	42.3	51.9	60.5	69.2	67.9	58.6	48.9	38.9	30.2	47.7
Chino	714	9	50.4	53.5	56.6	60.8	64.7	71.6	77.1	75.2	71.2	63.8	56.8	52.2	62.8
Claremont	1,200	9	49.7	51.6	53.0	57.1	60.7	66.7	71.6	70.6	69.2	62.4	57.3	51.6	60.1
Cloverdale	315														
Colfax	2,421	30	44.4	45.9	49.1	54.3	61.2	71.2	75.3	76.5	69.5	59.9	51.7	46.6	59.0
Colton	965	24	50.6	53.2	57.1	61.4	67.5	73.2	78.5	78.9	73.8	64.8	57.5	53.0	64.0
Corning	277	15	45.2	48.8	52.6	60.3	68.2	77.3	83.4	81.1	73.9	64.8	55.1	47.3	63.2
Craftonville	1,759	9	51.4	52.1	53.8	61.6	66.7	74.0	79.1	78.3	73.4	64.1	57.9	51.1	63.6
Crescent City	50	7	47.2	47.6	47.1	49.0	51.6	54.9	56.5	57.4	56.0	53.0	50.1	47.8	51.5
Cuyamaca	4,543	2													
Davisville	51	29	47.6	51.6	56.2	60.8	67.9	74.8	77.9	74.1	72.0	64.9	55.7	48.8	62.9
Delano	319	25	47.1	51.7	56.8	62.6	70.8	79.7	85.7	85.5	78.6	66.4	55.8	48.9	65.8
Delta	1,138	16	41.8	45.5	50.8	57.4	64.8	72.2	78.9	76.3	69.3	59.3	51.1	44.2	59.3
Drytown	790	9	45.3	49.3	51.2	56.1	61.0	68.5	76.3	74.6	68.0	59.8	52.8	45.4	59.4
Dunnigan	65	24	46.3	49.2	55.0	62.4	70.3	77.9	81.8	79.7	74.6	69.3	55.0	47.3	63.8
Dunsmuir	2,285	12	38.9	40.8	44.4	49.5	57.5	63.4	69.5	66.9	60.5	52.4	44.9	39.7	52.0
Durham	180	6	45.2	50.2	51.1	57.2	63.2	73.4	79.4	75.7	68.1	60.2	51.0	43.7	59.9
Edmanton	4,750	8	34.2	35.2	36.5	42.8	49.0	57.5	64.5	62.8	56.0	49.0	41.0	34.4	46.9
Elcajon	463	2													
Eldorado	1,609	12	45.8	48.6	52.3	57.8	64.5	72.7	79.3	76.6	69.6	62.0	54.2	47.5	60.9
Elmdale	126	1													
Elmira	75	15	47.9	51.7	56.1	62.5	68.1	74.1	77.1	75.8	72.1	63.8	56.0	49.0	62.9
Elsinore	1,234	6	50.3	53.0	56.3	61.7	66.0	71.5	78.4	77.1	74.2	65.6	59.2	52.6	63.8
Escondido	650	7	49.6	52.0	54.3	58.3	62.6	67.9	72.5	72.1	69.0	61.5	55.1	49.5	60.3
Fallbrook	700	25	50.1	51.5	53.8	57.3	61.1	65.8	69.7	70.3	67.5	60.9	55.8	52.9	59.7
Farmington	111	22	45.7	50.1	53.9	59.1	66.1	73.7	78.2	76.2	72.0	63.7	53.7	47.0	61.6
Fernando	1,066	23	50.5	53.0	56.3	61.1	64.7	70.1	74.7	75.4	72.0	65.0	59.2	54.0	63.0
Folsom	182	12	47.2	51.1	55.9	61.7	67.7	75.8	81.9	79.4	72.8	64.0	55.6	47.6	63.3
Fort Ross	100	8	48.3	49.0	50.0	51.8	54.4	56.8	57.5	59.5	57.2	55.1	52.3	49.6	53.4
Fruto	624	12	47.1	49.7	52.9	58.9	67.9	77.0	82.5	80.6	72.3	64.2	56.1	47.8	63.1
Galt	49	23	47.3	50.3	55.2	61.2	67.1	74.6	79.0	77.4	72.0	63.0	54.0	48.7	62.5
Georgetown	2,750	28	46.4	48.4	51.9	55.4	62.4	70.9	78.8	77.9	73.0	63.6	55.4	48.5	61.0
Greenville	3,600	7	33.2	36.7	38.5	46.5	52.7	59.5	65.4	63.5	56.7	49.7	40.6	33.6	48.0

NORMAL MONTHLY AND ANNUAL TEMPERATURE (DEGREES FAHRENHEIT)—Continued.

Stations.	Elevation.	Length of record.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
	Feet.	*Years.*													
Healdsburg	100	8	44.6	48.1	50.3	54.9	58.7	63.9	66.8	64.8	62.8	59.4	54.0	46.0	56.2
Hornbrook	2,154	13	35.0	39.7	45.5	51.8	61.3	68.0	75.3	75.3	65.0	52.1	42.7	37.5	54.1
Huron	367	9	47.2	51.4	55.3	61.7	68.3	78.4	86.2	83.0	74.3	65.2	56.2	47.7	64.5
Independence	3,907	5	40.7	45.8	50.0	57.2	63.0	72.6	79.1	76.0	69.0	59.4	48.8	42.0	58.7
Indio	− 20	23	52.9	58.7	65.3	72.5	80.1	88.3	94.5	93.0	86.5	75.4	62.6	56.6	73.7
Ione	287	23	46.6	49.2	53.9	58.7	65.0	73.6	78.6	78.1	71.6	62.5	53.4	48.2	61.6
Iowa Hill	2,825	20	43.4	45.3	47.1	53.7	59.8	67.5	75.2	74.5	67.8	59.5	51.4	45.8	57.4
Jackson (near)	1,975	9	41.9	44.8	46.8	53.3	57.3	65.4	72.9	70.2	64.7	57.1	49.6	43.0	55.6
Keeler	3,620	16	41.8	46.5	52.9	61.7	69.4	77.9	84.7	83.4	73.6	64.3	52.5	43.8	62.7
Kennedy Gold Mine	1,500	9	43.5	46.5	48.4	53.7	59.4	67.8	75.2	73.3	66.9	59.1	51.2	43.9	57.4
King City	333	14	48.4	48.8	53.5	56.2	59.6	63.7	67.0	66.4	66.0	59.3	53.8	49.0	57.6
Knights Landing	45	23	46.8	50.3	54.8	59.2	66.6	72.3	77.4	76.6	70.9	62.7	54.1	48.4	61.7
Kono Tayee	1,325	8	44.6	47.5	49.5	55.7	60.8	69.1	76.2	74.7	67.8	60.3	52.0	45.5	58.6
Laporte	5,000	7	33.4	35.4	34.5	41.3	47.7	56.8	62.5	59.8	53.3	46.6	39.6	34.1	45.4
Lemon Cove	600	6	48.2	53.6	56.1	62.2	69.0	78.2	83.3	79.9	74.4	67.2	55.6	46.4	64.5
Lick Observatory	4,209	12	39.7	40.5	41.0	46.0	51.6	60.5	69.4	69.1	61.9	54.0	49.4	42.0	52.1
Lodi	35	19	46.2	50.1	54.7	58.3	63.4	69.1	73.7	73.0	69.7	62.3	53.6	47.3	60.1
Los Banos	121	14	46.5	50.3	55.8	63.4	68.4	76.9	81.5	79.3	74.0	64.2	54.4	47.1	63.5
Los Gatos	600	14	47.6	49.6	51.8	56.0	60.3	65.3	67.7	67.2	65.6	60.7	54.3	48.8	57.9
Manzana	2,850	7	42.4	44.6	47.5	54.9	61.2	72.3	80.1	78.4	71.2	60.1	51.1	43.4	58.9
Martinez	10	23	46.4	49.2	52.9	57.0	61.2	66.7	68.4	66.5	64.9	59.7	53.0	47.8	57.8
Marysville	67	30	48.4	51.3	57.4	62.0	68.8	76.2	80.0	78.9	74.0	65.3	56.4	49.9	64.0
Mendota	177	7	46.7	49.9	53.5	62.2	68.4	77.0	83.1	78.6	71.8	64.1	54.3	48.2	63.1
Merced	173	27	47.0	51.0	55.0	60.0	67.3	75.3	81.7	79.3	73.7	64.8	55.4	48.3	63.2
Modesto	90	29	46.6	50.1	55.9	62.2	69.4	76.6	81.5	79.7	74.7	65.3	55.8	48.1	63.8
Mokelumne Hill	1,550	8	41.6	45.1	46.8	53.0	59.5	69.3	76.9	73.1	65.8	58.2	50.5	43.4	57.0
Mojave	2,751	24	45.3	48.8	53.5	59.7	68.0	77.5	85.7	84.2	73.9	65.6	54.8	46.8	64.0
Monterey	15	36	50.2	51.2	53.9	55.8	58.3	60.8	61.0	61.9	61.5	58.2	54.3	51.7	56.6
Monterio	4,500	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mount Tamalpais	2,375	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Napa (S. H.)	20	23	45.4	49.4	51.8	55.9	59.9	64.6	65.8	65.0	63.6	58.7	51.8	46.5	56.5
Needles	491	9	52.4	57.8	64.8	72.2	80.2	87.8	94.4	92.3	84.7	72.2	60.1	52.8	72.6
Nevada City	2,580	9	40.8	42.5	44.2	49.8	55.6	62.9	68.6	67.0	60.6	54.0	47.0	41.9	52.9
Newcastle	956	8	46.4	47.7	51.0	58.2	64.7	74.0	80.2	77.7	72.6	63.5	54.9	47.4	61.5
Newhall	1,200	24	47.9	50.2	54.1	58.9	64.1	70.7	76.6	77.3	71.5	62.1	54.8	49.5	61.5
Newman	92	12	48.0	51.8	56.1	63.1	70.7	78.9	84.6	81.8	74.2	64.5	57.1	49.4	65.1
Niles (near)	87	14	51.7	54.4	56.7	59.9	62.9	67.2	68.9	69.0	68.3	62.3	56.8	52.4	60.9
North Hill Vineyard	660	11	47.0	50.8	54.0	58.6	64.6	72.6	78.6	76.5	71.5	64.2	56.3	46.9	61.8
Oakdale	156	7	45.7	48.7	52.7	59.3	64.9	73.9	79.7	76.3	71.4	62.5	52.9	44.9	61.1
Ogilby	354	11	56.4	60.7	68.3	76.3	84.0	93.8	99.4	98.1	91.8	77.3	67.8	56.0	77.5
Oleta	1,510	9	42.8	44.9	47.3	52.5	58.5	66.6	73.0	70.6	63.0	55.6	48.6	42.8	55.6
Orland	254	18	47.6	51.2	55.7	62.4	70.4	78.7	86.4	84.2	76.7	66.4	56.4	47.9	65.4
Oroville	188	17	48.1	51.5	55.8	60.7	67.2	75.2	81.3	79.3	73.8	66.6	57.1	48.8	63.8
Palermo	185	10	45.5	49.7	52.8	58.5	65.6	74.3	78.9	77.1	70.0	61.9	52.4	45.2	61.0
Palm Springs	584	12	55.3	58.7	65.1	74.6	81.1	90.6	97.7	93.2	85.2	74.5	65.1	56.1	74.7
Paso Robles (near)	723	14	44.6	47.8	51.6	57.9	61.9	68.4	72.5	71.1	66.9	59.8	51.6	45.6	58.3
Peachland	220	5	48.0	50.5	51.8	56.2	59.6	65.0	66.0	63.3	63.2	58.6	52.4	47.3	56.8
Pine Crest	1,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Placerville	1,820	12	41.1	43.6	46.3	51.1	58.5	66.8	72.7	69.8	62.8	55.5	48.1	42.0	54.8
Point Lobos	250	8	48.4	50.1	50.0	52.0	53.9	55.3	56.0	57.0	57.6	56.3	53.8	49.4	53.3
Point Reyes	490	9	49.4	49.2	49.6	50.2	51.6	52.8	53.7	54.5	56.1	54.7	53.0	50.6	52.1
Pollasky	1,200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pomona (near)	857	7	51.5	53.7	55.8	61.1	65.1	70.2	74.6	74.7	72.0	64.8	59.1	53.3	63.0
Porterville	461	12	48.1	51.7	56.8	64.0	73.2	82.5	88.1	84.8	76.3	64.6	54.9	48.5	66.0
Poway	460	17	48.0	49.5	52.4	55.8	60.6	65.1	68.9	69.6	65.9	59.4	53.5	51.1	58.3
Quincy	3,350	6	34.6	38.0	41.0	47.6	54.3	62.4	65.9	63.6	57.0	49.6	41.1	34.5	49.1
Redding	557	26	45.2	49.3	53.8	60.2	67.4	75.6	82.3	81.0	74.0	64.5	54.1	47.0	62.8
Redlands	1,335	8	50.8	52.2	54.7	61.1	65.8	73.8	78.3	77.5	72.1	65.0	58.9	53.2	63.5
Reedley	347	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Represa	305	8	45.7	48.7	51.6	57.2	63.0	71.4	76.8	74.0	68.3	61.3	53.3	45.8	59.8
Rio Vista	33	8	45.6	50.8	54.3	58.0	63.6	70.4	74.5	72.6	69.3	62.4	53.7	45.4	60.0
Riverside	1,025	19	51.1	52.7	55.9	60.4	65.2	70.6	76.3	76.4	72.1	64.2	58.2	53.4	62.9
Rocklin	249	30	46.6	50.1	54.9	60.4	67.8	75.0	80.0	78.2	72.7	63.6	53.9	47.9	62.5
Rosewood	865	7	42.2	45.7	49.6	56.5	63.7	73.3	80.4	76.8	68.3	58.8	48.8	42.7	58.9

NORMAL MONTHLY AND ANNUAL TEMPERATURE (DEGREES FAHRENHEIT)—Continued.

Stations.	Elevation.	Length of record.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
	Feet.	*Years.*													
Salton	-263	12	55.7	58.8	66.0	76.5	83.1	93.8	98.9	97.2	91.0	79.1	66.8	56.1	76.9
San Ardo	256	14	46.4	49.4	53.0	58.4	61.9	68.2	69.4	70.0	66.2	61.1	53.9	48.0	58.9
Sanger	371	12	47.7	52.8	56.8	64.2	72.6	80.8	87.9	84.4	75.2	66.1	56.8	47.6	66.1
San Jacinto	1,500	8	49.2	51.3	53.5	57.3	64.5	70.2	76.2	76.0	70.6	62.2	56.1	50.0	60.2
San Leandro	50	6	53.1	54.7	55.8	58.3	60.6	63.9	64.1	64.6	64.4	61.5	56.8	52.4	59.2
San Luis Obispo	201	6	52.2	54.6	54.0	56.4	58.0	63.0	65.0	65.0	64.9	61.5	57.6	53.0	58.7
San Miguel	616	11	46.6	49.2	53.5	58.3	63.8	70.3	75.0	72.9	68.6	61.9	53.7	47.6	60.1
San Miguel Island	500	7	53.6	54.9	53.3	55.5	56.3	58.8	60.8	60.8	60.6	60.4	57.4	54.8	57.3
Santa Ana	137	12	55.5	57.5	60.2	64.2	68.8	72.2	75.0	75.4	73.3	68.4	61.8	57.5	65.8
Santa Barbara	130	17	53.2	54.8	55.4	58.4	60.2	63.2	65.1	66.9	65.7	62.6	59.1	55.7	59.9
Santa Cruz	18	28	51.1	52.7	54.5	57.8	59.8	63.1	63.9	64.5	63.1	59.7	55.5	52.4	58.2
Santa Margarita	996	12	43.4	46.5	49.7	55.9	60.4	67.2	70.7	69.1	65.9	59.2	50.8	45.0	57.0
Santa Maria	220	13	51.6	52.6	55.2	57.8	59.8	62.9	64.4	64.9	64.0	62.3	57.8	53.7	58.9
Santa Monica	92	15	54.2	54.6	57.8	61.3	64.4	66.9	69.9	70.3	67.8	64.8	60.2	57.0	62.5
Santa Paula	286	12	52.4	54.0	55.8	60.5	63.4	65.6	68.5	68.4	66.3	62.5	59.8	55.6	61.1
Santa Rosa	151	12	48.0	50.5	52.6	56.4	62.0	66.8	67.2	65.9	64.2	59.6	53.9	48.9	58.0
Selma	311	15	45.0	50.8	54.8	62.4	70.5	79.2	85.4	83.1	77.4	64.0	54.6	46.0	64.4
Sisson	3,555	12	34.0	36.7	39.7	47.9	55.3	63.4	69.7	67.6	58.2	50.0	41.1	34.5	49.7
Soledad	188	27	47.1	50.2	53.6	57.3	62.3	65.5	66.1	65.1	64.9	59.8	53.2	49.3	57.9
Sonoma	30	8	49.0	50.0	52.3	54.6	59.2	61.6	65.4	65.6	64.7	60.4	55.4	48.5	57.3
Storey	296	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Suisun	20	20	47.2	51.5	55.8	59.9	63.8	66.3	71.1	70.7	69.8	63.0	54.8	48.6	60.4
Summerdale	5,270	5	37.1	38.5	37.3	43.3	49.5	61.0	68.5	65.5	60.0	49.3	43.3	39.5	49.4
Summit	7,017	28	28.0	28.8	31.4	35.5	42.6	53.2	61.0	60.3	53.7	44.0	35.8	30.5	42.1
Susanville	4,195	12	31.1	34.4	39.6	47.3	56.9	63.9	71.8	70.7	61.6	50.6	41.8	32.4	50.1
Tehachapi	3,964	21	38.2	39.3	44.1	50.2	59.2	69.4	76.4	74.5	66.1	56.1	46.5	39.5	54.9
Tehama	220	33	47.0	51.0	54.9	60.7	68.9	77.6	84.1	81.3	74.3	64.4	55.1	48.6	64.0
Tejon Rancho	1,450	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tequisquita Rancho	244	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tracy	64	21	46.9	50.5	54.8	60.9	69.1	75.9	79.9	77.5	72.0	63.5	54.2	49.6	62.9
Tulare (near)	274	7	47.9	53.4	55.9	62.6	68.2	77.4	83.0	80.1	71.9	63.5	54.9	46.8	63.8
Ukiah	620	8	45.1	47.7	50.2	55.0	60.4	67.7	73.4	71.8	65.7	58.4	51.2	44.7	57.6
Upper Lake	1,359	16	44.8	47.5	50.4	54.6	59.8	66.2	73.1	73.2	67.1	59.8	51.4	45.6	57.8
Upper Mattole	244	14	47.3	48.7	51.0	54.0	58.6	60.7	64.8	65.7	62.8	57.4	51.9	47.5	55.8
Vacaville	175	13	46.4	51.2	54.3	59.0	65.1	71.9	76.4	75.2	71.2	64.4	55.7	47.6	61.5
Valley Springs	673	12	46.2	50.9	54.3	60.2	65.8	74.5	81.0	78.3	72.0	63.2	56.2	47.7	62.6
Ventura	50	8	52.8	53.2	53.6	56.0	58.6	62.1	63.5	64.6	61.4	60.1	57.2	54.9	58.2
Vina	213	12	46.6	49.9	54.8	61.0	68.0	78.0	84.9	81.5	73.7	65.1	56.1	47.1	63.9
Visalia	334	13	43.6	48.7	51.6	58.6	66.3	74.0	81.0	78.8	71.4	62.0	52.0	44.6	61.1
Volcano	220	12	55.3	60.6	67.5	78.9	86.8	96.4	101.3	98.7	90.0	77.9	64.9	56.1	77.9
Watsonville	23	5	52.4	52.3	55.1	56.6	58.7	62.4	63.3	62.8	60.3	58.4	56.1	51.3	57.5
Westley	90	12	48.4	52.4	57.8	64.2	70.6	77.9	83.1	79.6	73.9	66.2	57.0	49.3	65.0
Wheatland	84	14	44.6	48.7	52.9	58.4	64.4	71.9	77.2	75.5	70.3	62.5	53.0	45.1	60.4
Whittier	239	12	56.5	58.5	61.1	65.4	68.6	73.2	77.4	76.9	74.3	67.7	63.5	57.9	66.7
Williams	89	24	46.1	50.0	54.6	61.1	69.3	78.1	83.5	81.0	74.2	64.5	54.0	47.2	63.6
Willows	132	22	45.2	48.8	54.6	60.3	68.5	76.9	82.9	81.6	75.6	65.2	54.8	47.2	63.5
Winters	136	12	46.9	51.5	56.0	63.1	70.6	79.6	85.5	81.3	74.6	66.9	56.3	48.4	65.1
Wire Bridge	565	7	45.4	49.2	51.6	59.6	64.9	73.4	79.9	75.9	69.8	61.1	51.9	45.6	60.7
Woodland	63	24	46.2	49.9	54.5	59.9	66.9	74.3	78.7	76.2	71.1	63.7	54.8	48.4	62.1
Yreka	2,635	10	34.8	37.3	43.5	48.9	56.0	62.5	69.5	69.2	60.4	51.4	42.4	34.8	51.0
Yuba City	70	9	48.1	52.3	56.2	62.7	68.5	77.4	81.6	78.5	73.2	64.2	55.4	47.8	63.8

MINIMUM WINTER TEMPERATURES OF THE HIGH SIERRA.

(By Prof. J. N. Le Conte.)

The following are the results of two observations on the minimum winter temperature of the summit of Mount Lyell in the Sierra Nevada Mountains of Central California. This point is situated about 18 miles in an air line and 40 miles by trail east of the Yosemite Valley. Its geographical coordinates, as given in the United States Geographical Surveys West of the One Hundredth Meridian, are: North latitude 37° 44′ 11″, longitude 119° 16′ 18.07″ west. Its elevation, according to the United States Geological Survey, is 13,041 feet above the sea.

Mount Lyell was selected principally on account of its comparative ease of access. The group of mountains of which it is one of the dominating points stands at the southern extremity of what may be called the "northern high Sierra," or that part of the crest of the great range lying between the headwaters of the Mokelumne River and those of the North Fork of the San Joaquin. In passing south along the high Sierra the summit peaks become progressively higher and more rugged, and the area above the timber line more extensive. About the head of the Merced River the northern portion culminates in a magnificent pile of snow capped peaks extending between Mounts Lyell and Ritter, where the southernmost glaciers of the range are to be found. South of Mount Ritter the crest breaks down in a wide belt of rolling, forest-covered mountains for nearly 20 miles, but rises again finally at Red Slate Peak. South of this the range extends as an unbroken wilderness of alpine peaks, rugged beyond description, culminating a second time in Mount Whitney, about 100 miles south of Lyell. This latter is the high Sierra par excellence.

On July 8, 1897, minimum thermometer No. 4315 of the United States Weather Bureau was left upon the summit. It was inclosed in a thin wooden box about 6 inches square and 2 feet long, one side of which was laid exactly in line with the edge of the great southern precipice, here over 1,500 feet high. Large stones were laid upon it, but one side was exposed to the weather, and in no way could it become entirely covered with snow. On June 5, 1898, the mountain was revisited, and the thermometer box was carefully uncovered. The thermometer was in perfect condition, and registered −13.6° F., −25° C. It was reset and left upon the mountain a second year. Professor Le Conte was unable to make the ascent of the mountain in 1899, but Prof. H. I. Randall, of the civil engineering department of the State University, visited the spot in July and obtained the reading. In this case it was −17.6° F.

It will be remembered that the winter of 1897–98 was an exceptionally dry one, and that of 1898–99 was not severe. It is interesting to compare these temperatures with those taken a few miles farther east and many thousand feet lower:

	1897–98.	1898–99.
Mount Lyell; elevation, 13,040 feet	−13.6	−17.6
Bodie; elevation, 8,248 feet	−24.0	−30.0
Bishop; elevation, 4,460 feet	+10.0	+ 5.0

It would be instructive to obtain the minimum winter temperatures of a number of high peaks distributed along the crest of the range from Lake Tahoe to Mount Whitney.

GENERAL PRECIPITATION TABLES.

Precipitation of California (Inches and Hundredths).

ANAHEIM, ORANGE COUNTY.

[Figures appearing in brackets ([ ]) are approximate.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	2.19	4.07	1.49	1.93	0.52	0.00	0.00	0.00	0.00	0.15	T.	0.95	11.30
1879	1.96	0.57	0.35	0.37	T.	0.00	0.00	0.00	0.00	0.11	1.72	3.10	8.18
1880	1.29	1.32	1.57	2.20	0.00	0.00	0.00	0.00	0.00	0.28	0.44	4.92	12.02
1881	0.25	0.28	0.85	0.06	0.00	0.00	0.00	0.00	0.00	0.81	0.34	0.37	2.96
1882	0.40	1.90	2.42	0.48	0.40	0.00	0.00	0.00	0.00	0.26	0.78	0.00	6.64
1883	1.48	1.98	1.22	0.10	2.78	0.00	0.00	T.	0.00	1.12	0.00	1.40	10.08
1884	2.80	10.58	6.70	1.75	0.54	1.28	0.00	0.00	0.00	0.15	0.64	3.72	28.16
1885	0.61	0.00	0.00	0.64	0.00	0.00	0.00	0.00	0.00	T.	2.98	1.16	5.34
1886	4.63	0.82	2.70	2.51	0.00	0.00	0.00	T.	0.00	0.00	0.33	T.	10.99
1887	0.43	5.71	0.00	2.21	T.	0.00	0.00	0.00	T.	0.75	0.92	2.16	12.18
1888	6.29	0.92	5.90	T.	0.00	0.00	T.	0.00	0.00	T.	3.75	4.19	21.05
1889	0.14	1.28	7.97	0.24	0.57	0.00	0.00	T.	0.76	2.31	0.30	10.95	24.52
1890	3.36	1.54	0.78	0.00	T.	0.00	0.00	0.00	0.29	0.00	0.19	3.36	9.52
1891	0.24	9.05	0.59	1.81	0.40	0.00	0.00	0.00	0.00	0.00	0.00	1.44	13.53
1892	0.77	2.35	1.23	0.15	1.48	0.00	0.00	0.00	0.00	0.19	0.94	1.48	8.59
1893	2.98	2.06	6.07	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.30	2.38	14.02
1894	0.68	0.35	0.48	0.13	0.10	0.00	T.	T.	0.10	0.00	0.00	5.69	7.53
1895	6.92	0.68	2.63	0.05	0.10	0.00	0.00	0.00	0.00	0.00	0.97	0.48	11.83
1896	3.25	0.00	3.03	T.	0.00	0.00	0.00	0.00	0.00	1.98	1.40	1.59	11.25
1897	3.00	4.35	2.20	0.00	0.00	0.00	0.00	0.00	0.10	1.60	0.00	0.00	11.25
1898	1.65	0.10	1.00	0.20	1.00	0.00	0.00	0.00	T.	0.00	0.00	0.20	4.15
1899	2.78	0.15	1.61	0.20	0.00	0.51	0.00	0.00	0.07	1.32	0.84	1.45	8.93
1900	1.29	0.00	0.73	1.09	1.49	0.09	0.00	0.00	0.00	0.34	4.81	0.00	9.84
Mean (23 years)	2.15	2.18	2.24	0.71	0.36	0.08	T.	T.	0.06	0.49	0.94	2.32	11.53

ANTIOCH, CONTRA COSTA COUNTY.

[Elevation, 46 feet.]

1879	1.57	1.69	1.50	0.73	0.88	0.05	0.00	0.00	0.00	0.77	1.38	1.51	10.08
1880	0.95	1.07	1.14	3.65	0.33	0.00	0.00	0.00	0.00	0.00	0.25	8.25	15.64
1881	1.74	1.54	1.11	1.30	T.	0.00	0.00	0.00	T.	T.	0.95	1.89	8.53
1882	0.95	1.20	2.35	0.25	0.00	0.00	0.00	0.00	0.13	1.02	2.49	0.75	9.14
1883	1.89	0.48	1.99	0.60	2.55	0.00	0.00	0.00	0.13	0.70	0.55	0.33	9.22
1884	3.50	3.64	5.73	2.62	0.00	1.15	0.00	T.	T.	1.25	T.	2.79	20.68
1885	1.16	0.12	0.35	0.96	0.00	T.	T.	0.00	0.00	0.00	4.87	2.19	9.65
1886	3.60	0.00	0.56	2.03	T.	0.00	0.00	0.00	0.00	0.40	T.	1.02	7.61
1887	0.38	3.87	0.49	0.95	0.00	0.00	0.00	0.00	0.41	0.00	0.29	2.30	8.69
1888	2.84	1.24	2.05	0.00	0.50	0.00	0.00	0.00	0.70	0.00	1.82	2.88	12.03
1889	0.95	0.52	4.81	0.46	1.07	T.	0.00	0.00	0.00	4.51	2.09	6.54	20.95
1890	5.16	2.97	2.45	0.31	0.54	0.00	0.00	0.00	0.93	0.04	0.00	1.32	13.72
1891	0.41	4.55	2.01	1.14	0.00	0.36	0.00	0.00	0.75	0.75	0.75	4.43	15.15
1892	1.06	1.63	2.14	0.46	0.76	0.00	0.00	0.00	0.22	0.45	4.52	4.78	16.02
1893	2.93	1.88	2.64	1.02	0.41	0.00	0.00	0.00	0.02	0.06	2.18	1.63	12.77
1894	4.29	2.54	0.37	0.28	1.61	0.84	0.00	0.00	1.07	0.63	0.38	8.11	20.12
1895	5.57	1.52	0.75	0.00	0.52	0.00	0.00	0.00	0.15	0.15	1.63	0.65	19.94
1896	6.15	0.10	1.44	3.18	0.22	0.00	0.00	0.00	0.47	1.55	2.34	1.20	16.76
1897	1.98	3.07	3.34	0.12	0.00	0.00	0.00	0.00	0.00	1.09	0.35	0.65	10.60
1898	0.79	1.32	0.45	0.15	0.40	0.10	0.00	0.00	0.15	0.84	0.00	0.72	4.92
1899	1.61	0.03	5.22	0.15	0.45	0.05	0.00	0.00	0.00	2.66	2.36	1.08	13.56
1900	3.04	0.14	0.41	8.57	[0.49]	0.00	0.00	0.00	0.00	0.70	3.43	0.95	9.73
Mean (22 years)	2.39	1.60	1.97	0.95	0.49	0.12	T.	0.01	0.23	0.80	1.48	2.54	12.57

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

BAKERSFIELD, KERN COUNTY.

[Elevation, 394 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	0.57	0.20	1.88	0.15	0.22	0.00	0.00	0.00	0.00	2.04	0.22	1.75	7.03
1890	1.20	0.16	0.24	0.00	0.06	0.00	0.00	0.03	0.47	0.00	0.00	1.84	3.50
1891	0.20	1.20	0.25	0.27	0.22	0.02	0.00	0.00	0.12	0.00	0.20	1.08	3.96
1892	1.61	0.45	1.25	T.	0.41	0.39	0.00	0.00	0.00	0.01	0.55	0.75	5.42
1893	0.61	0.88	2.30	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.97	5.28
1894	0.91	0.00	0.50	0.00	0.02	0.17	0.00	0.00	0.30	0.08	0.00	1.43	3.46
1895	2.53	0.40	1.15	0.29	0.31	0.00	0.00	0.00	0.00	1.06	0.54	0.33	6.61
1896	1.66	0.00	1.58	0.35	0.15	0.00	0.18	0.05	0.00	0.73	0.35	0.81	5.86
1897	0.97	2.13	0.72	0.29	0.00	0.00	0.00	0.00	0.00	0.62	0.12	0.31	5.16
1898	1.36	0.28	0.26	0.05	0.20	0.00	0.00	0.00	0.65	0.00	0.26	0.10	2.16
1899	0.82	0.15	0.58	0.16	0.08	0.00	0.00	T.	T.	0.57	1.08	0.77	4.21
1900	0.84	0.26	0.43	0.78	0.48	0.00	[0.02]	0.00	0.00	0.60	1.00	T.	4.41
Mean (12 years)	1.11	0.51	0.93	0.22	0.18	0.05	0.02	0.01	0.13	0.47	0.38	0.80	4.76

BERKELEY, ALAMEDA COUNTY.

[Elevation, 320 feet.]

1887	1.66	9.41	0.98	2.53	0.06	0.04	0.01	0.00	0.40	0.00	0.76	2.94	18.79
1888	5.84	1.92	4.50	0.20	0.42	0.50	T.	0.00	0.59	0.02	2.71	3.79	20.49
1889	0.78	0.54	7.58	0.72	1.50	0.06	0.00	0.00	0.00	5.80	2.39	12.59	31.96
1890	11.16	5.70	4.74	2.18	1.44	T.	0.00	T.	0.25	0.00	0.00	3.32	28.79
1891	1.13	10.68	3.17	3.42	1.61	0.38	0.44	0.00	0.74	0.18	1.01	6.22	28.98
1892	2.34	4.20	3.60	1.68	2.97	0.00	0.01	0.00	0.07	1.99	5.35	6.64	28.85
1893	3.90	3.28	6.19	1.62	0.26	0.00	0.00	0.00	0.38	0.52	5.22	2.62	23.99
1894	9.54	3.77	0.91	0.57	2.01	1.11	0.00	0.00	1.61	3.29	1.35	12.63	36.79
1895	10.88	3.25	2.64	2.30	1.06	0.00	0.04	0.00	1.28	0.07	1.78	2.20	25.50
1896	11.40	0.36	2.93	6.72	0.94	0.00	T.	0.90	0.76	1.91	5.15	4.92	35.99
1897	3.73	4.68	5.97	0.44	0.20	0.30	0.00	0.00	0.20	2.48	1.58	2.71	22.29
1898	1.54	3.28	0.31	0.19	1.87	0.24	0.00	0.04	0.93	1.88	0.97	1.22	12.47
1899	5.90	0.22	13.19	1.56	1.70	0.05	0.00	T.	0.00	5.26	5.85	3.46	37.19
1900	4.18	1.02	3.00	1.58	0.91	0.08	0.00	0.02	0.05	1.41	5.04	1.83	19.12
Mean (14 years)	5.28	3.65	4.26	1.84	1.21	0.20	0.04	0.07	0.52	1.77	2.80	4.79	26.51

BISHOP, INYO COUNTY.

[Elevation, 4,450 feet.]

1884	0.62	0.64	0.94	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	3.25
1885	0.00	0.00	0.67	0.14	0.00	0.00	0.00	0.00	0.00	0.02	0.35	0.00	1.18
1886	1.03	0.00	0.50	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	2.11
1887	0.65	1.58	0.00	0.35	0.55	0.35	0.00	0.00	0.15	0.15	0.05	1.10	4.93
1888	1.37	0.47	0.05	0.00	0.00	0.35	0.20	0.00	0.00	0.00	1.72	0.40	4.56
1889	0.10	0.50	1.46	0.12	0.30	0.00	0.00	0.00	0.00	0.03	0.35	1.20	4.06
1890	4.57	0.30	0.00	0.00	0.00	0.00	0.00	0.50	0.69	0.00	0.00	1.00	7.06
1891	0.00	3.70	0.28	0.00	2.90	0.00	0.00	0.03	0.19	0.00	0.00	3.52	10.62
1892	0.10	0.70	1.10	0.00	0.25	T.	0.00	0.00	0.00	0.20	1.42	2.27	6.04
1893	1.22	1.12	0.15	0.00	0.00	0.00	1.05	T.	0.19	0.00	0.10	0.49	4.32
1894	0.30	0.75	0.09	0.05	T.	0.35	T.	0.23	T.	0.00	0.00	2.00	3.77
1895	1.10	0.50	0.22	0.29	0.05	0.11	0.21	0.07	T.	0.16	0.15	T.	2.86
1896	1.07	0.00	0.60	0.05	0.03	0.00	0.57	0.06	0.05	T.	T.	0.16	2.59
1897	0.32	1.67	1.75	0.00	0.12	T.	0.01	0.05	0.09	0.39	T.	0.49	4.89
1898	0.05	0.13	T.	0.21	0.27	T.	T.	0.06	0.41	0.00	0.21	0.11	1.45
1899	1.65	0.00	T.	0.64	0.02	0.00	0.00	0.05	0.00	0.14	0.05	1.05	3.60
1900	0.49	0.01	0.54	0.60	0.34	0.12	T.	0.00	0.39	0.03	2.69	0.17	5.38
Mean (17 years)	0 86	0.71	0.49	0.18	0.28	0.08	0 12	0.06	0.13	0.07	0.42	0.89	4.27

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

BYRON, CONTRA COSTA COUNTY.

[Elevation, 33 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1880	0.92	1.02	0.79	5.18	0.18	0.00	0.00	0.00	0.00	0.00	0.53	7.56	16.13
1881	3.46	1.68	0.91	1.91	0.00	0.00	0.00	0.00	0.00	0.04	1.00	1.80	10.80
1882	1.15	1.02	3.11	0.72	0.00	0.00	0.00	0.00	0.02	0.97	1.69	0.32	9.00
1883	3.01	0.25	1.91	0.17	2.38	0.00	0.00	0.00	0.00	0.86	0.53	0.71	9.82
1884	2.41	4.15	5.61	2.50	0.00	1.54	0.00	0.00	0.00	1.23	0.00	3.33	20.77
1885	1.23	0.18	0.35	1.02	0.00	0.00	0.00	0.00	0.00	0.00	6.70	2.04	11.52
1886	4.09	0.00	1.79	2.23	0.00	0.00	0.00	0.00	0.00	0.89	0.00	0.95	9.95
1887	0.48	4.43	0.19	1.21	0.00	0.00	0.00	0.00	0.00	T.	0.42	2.90	9.63
1888	2.67	1.25	1.77	0.00	0.75	0.00	0.00	0.00	0.59	0.00	4.49	1.81	13.33
1889	0.71	0.72	4.24	0.49	0.98	0.12	0.00	0.00	0.00	4.52	2.86	8.33	22.97
1890	6.44	2.35	2.16	0.38	0.20	0.00	0.00	0.00	1.63	0.00	0.00	1.27	14.43
1891	0.19	2.83	0.40	1.60	0.00	0.00	0.00	0.00	0.53	0.00	0.32	3.55	9.42
1892	0.65	1.13	2.29	0.40	0.82	0.00	0.00	0.00	0.27	1.25	3.21	4.17	14.19
1893	2.57	2.34	2.43	0.90	0.38	0.00	0.00	0.00	0.00	0.00	1.50	1.33	11.45
1894	3.99	2.65	0.32	0.10	1.59	1.00	0.00	0.00	1.03	1.02	0.26	7.94	19.90
1895	4.28	1.37	0.85	1.02	0.37	0.00	0.00	0.00	0.18	0.63	0.95	0.59	10.24
1896	8.04	0.14	1.01	2.11	0.31	0.00	0.00	0.19	0.19	1.88	2.54	1.27	17.68
1897	2.44	2.52	2.88	0.00	0.00	0.00	0.00	0.00	0.00	1.47	0.18	1.06	10.55
1898	1.14	1.00	0.41	0.00	0.57	0.07	0.00	0.00	0.00	0.47	0.14	1.71	5.51
1899	2.62	0.00	5.25	0.61	0.40	0.05	0.00	0.00	0.00	3.26	1.91	1.61	15.71
1900	2.53	0.08	0.79	0.57	0.55	0.00	0.00	0.00	0.00	0.85	3.47	0.83	9.67
Mean (21 years)	2.62	1.48	1.88	1.10	0.45	0.13	0.00	0.01	0.21	0.92	1.56	2.62	12.98

CALIENTE, KERN COUNTY.

1876	[1.52]	2.02	1.66	0.53	T.	0.00	0.00	T.	0.00	0.52	T.	0.00	6.25
1877	1.08	0.47	1.08	1.27	0.52	0.00	0.00	0.00	0.00	0.00	0.84	2.31	7.57
1878	3.81	4.47	2.69	3.20	0.03	0.00	0.00	0.00	0.00	0.42	0.10	0.10	14.82
1879	0.20	0.34	0.33	1.43	0.20	0.04	0.00	0.00	0.00	1.08	1.77	3.46	8.85
1880	2.37	1.51	1.09	3.53	0.23	0.00	0.00	0.00	0.00	0.00	0.35	3.56	12.64
1881	1.61	1.54	1.91	0.64	0.23	0.00	0.00	0.00	0.13	0.81	0.30	0.51	7.68
1882	1.51	3.30	0.73	1.59	0.69	0.56	0.00	0.00	0.00	1.01	0.69	0.37	10.45
1883	0.04	1.76	0.82	2.42	1.07	0.00	0.00	0.00	0.08	0.76	0.05	1.81	8.81
1884	2.00	4.98	5.00	2.90	1.10	1.28	0.00	0.00	0.00	0.22	0.25	3.25	20.98
1885	0.25	0.00	0.45	3.00	1.05	0.00	0.05	0.00	0.00	0.05	3.88	1.33	10.06
1886	1.59	0.66	2.62	2.65	0.00	0.00	T.	0.00	0.00	T.	1.45	1.33	10.30
1887	0.38	2.76	0.07	2.66	0.21	0.00	0.00	0.00	0.00	0.63	0.05	1.43	8.22
1888	0.87	1.14	1.50	0.00	0.81	0.00	0.00	0.00	0.00	0.00	1.33	2.18	7.83
1889	0.59	0.20	3.15	0.60	0.00	0.00	0.00	0.00	0.00	1.35	1.05	3.65	10.59
1890	1.25	1.15	1.10	0.00	1.62	0.00	0.00	0.00	0.52	0.00	0.00	4.30	9.94
1891	0.19	2.83	0.40	1.60	0.00	0.00	0.00	0.00	0.53	0.00	0.32	3.55	9.42
1892	0.75	1.00	4.25	0.30	1.00	0.50	0.00	0.00	0.00	0.00	0.00	2.80	10.60
1893	1.00	2.15	3.71	0.70	0.00	0.00	0.00	0.00	0.00	0.10	0.20	3.45	11.31
1894	3.30	1.40	1.60	0.20	0.50	0.70	0.00	0.00	0.60	0.20	0.25	4.39	13.14
1895	5.28	3.10	1.67	0.85	0.87	0.00	0.00	0.00	0.00	2.31	1.51	1.20	16.79
1896	2.53	0.25	3.30	1.58	0.56	0.00	0.05	0.29	0.00	1.02	1.02	1.93	12.53
1897	1.25	4.96	2.41	0.35	0.13	0.00	0.00	0.00	0.00	0.90	0.00	2.02	12.02
1898	1.67	0.70	1.45	0.76	1.40	0.00	0.00	0.00	0.10	0.00	0.45	0.68	7.21
1899	1.73	0.41	3.26	0.28	1.13	0.00	0.00	0.00	0.00	0.25	1.52	0.64	9.22
1900	0.50	0.98	0.80	1.75	2.35	0.00	0.00	0.00	0.00	0.00	2.13	0.00	8.51
Mean (25 years)	1.49	1.76	1.88	1.39	0.63	0.12	T.	0.01	0.08	0.47	0.78	2.01	10.63

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

CALISTOGA, NAPA COUNTY.

[Elevation, 363 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1873	0.20	4.43	1.28	1.43	0.00	0.00	0.00	0.00	0.00	0.63	2.75	10.19	20.91
1874	8.55	2.57	3.48	1.55	1.10	0.00	0.00	0.00	0.00	4.01	7.98	0.46	29.70
1875	7.89	0.56	2.18	0.00	0.00	1.52	0.00	0.00	0.00	0.45	6.79	4.03	23.42
1876	8.53	9.08	8.73	1.67	0.20	0.00	0.00	0.00	0.36	9.05	0.48	0.00	38.10
1877	6.55	2.49	1.64	0.65	0.50	0.28	0.20	0.00	0.00	1.49	2.14	3.02	18.96
1878	20.64	16.46	4.80	0.85	0.80	0.00	0.00	T.	0.49	1.56	1.30	1.57	48.47
1879	4.40	6.72	15.70	2.37	2.21	0.00	0.00	0.00	0.00	0.46	5.33	7.99	45.18
1880	3.94	1.88	1.64	15.31	1.55	0.00	0.00	0.00	0.00	0.00	0.00	15.83	40.15
1881	15.58	4.77	1.39	1.89	0.25	0.77	0.00	0.00	0.48	2.19	0.00	5.18	82.50
1882	3.81	5.53	3.84	1.65	0.17	0.00	0.00	0.00	0.71	3.57	4.70	1.42	25.40
1883	1.30	1.28	5.36	2.93	3.71	0.00	0.00	0.00	1.14	1.69	0.24	1.32	18.97
1884	6.57	4.42	9.78	5.98	0.42	2.06	0.00	0.00	0.19	1.83	0.05	15.08	46.38
1885	2.05	1.59	0.71	0.95	0.00	0.00	0.00	0.00	0.12	0.78	15.57	5.36	27.23
1886	9.39	T.	2.23	7.12	1.05	0.00	0.00	0.00	0.00	1.25	0.00	3.95	24.99
1887	2.22	11.18	1.58	2.82	T.	0.00	0.00	0.00	0.18	0.00	1.50	4.82	24.30
1888	7.89	2.87	5.64	0.26	0.20	1.16	0.00	0.00	0.89	0.00	6.14	6.91	31.96
1889	0.96	0.72	10.87	1.23	3.91	0.00	0.00	0.00	0.00	9.85	4.10	17.67	49.31
1890	18.00	4.78	9.16	2.25	1.70	0.00	0.00	0.00	0.10	0.00	0.00	4.85	40.84
1891	1.65	13.84	1.45	3.20	1.70	0.00	0.00	0.00	0.47	0.30	0.75	8.56	31.92
1892	5.78	5.52	5.03	3.10	0.00	0.56	0.00	0.00	0.00	1.93	8.01	10.79	40.72
1893	5.35	8.37	9.91	3.21	0.86	0.00	0.00	0.00	0.85	0.51	6.93	4.40	40.39
1894	15.28	7.82	3.21	2.45	2.01	1.29	0.00	0.00	1.00	2.65	1.09	15.39	52.19
1895	22.46	2.72	3.33	1.77	1.81	0.00	0.30	0.00	1.45	T.	4.85	4.62	43.31
1896	14.05	0.25	4.25	8.88	2.30	0.00	0.09	0.15	0.78	2.35	7.78	9.88	50.76
1897	4.85	9.31	7.56	1.52	0.35	2.24	0.00	0.00	0.04	2.43	2.18	4.66	35.14
1898	1.52	8.99	0.14	0.81	3.81	0.06	0.00	0.00	0.80	0.39	0.86	1.59	18.97
1899	9.52	0.03	10.72	1.51	0.58	1.52	0.00	0.07	0.00	7.95	6.79	5.66	44.35
1900	6.84	0.85	5.34	3.19	0.61	0.07	0.00	0.00	0.00	6.36	7.61	4.81	35.68
Mean (28 years)	7.71	4.96	5.04	2.88	1.14	0.41	0.02	0.01	0.36	2.28	3.79	6.43	35.01

COLFAX, PLACER COUNTY.

1870	[8.81]	5.55	5.41	3.19	0.25	0.00	0.00	0.00	0.00	1.21	2.58	3.94	30.94
1871	7.24	4.85	4.30	4.03	2.55	0.13	0.00	0.00	0.00	0.00	4.25	9.80	37.15
1872	10.02	13.68	4.69	3.40	0.61	0.40	0.00	T.	T.	0.00	3.99	10.48	47.27
1873	2.90	11.12	1.24	1.81	2.04	0.00	T.	0.00	0.00	0.00	2.27	18.84	40.22
1874	10.93	6.62	10.12	3.53	1.31	0.00	0.00	0.00	0.00	3.36	13.89	1.12	50.88
1875	12.32	0.19	3.23	0.20	1.90	0.00	0.00	0.00	0.00	0.95	14.84	7.10	40.73
1876	10.40	7.20	14.39	3.23	1.42	T.	0.00	0.00	0.00	7.98	0.62	0.00	45.24
1877	9.29	1.76	4.36	1.36	1.67	0.57	0.00	T.	0.00	0.95	3.38	1.76	25.10
1878	13.10	12.21	9.22	1.79	0.42	T.	0.00	0.00	0.56	0.00	2.08	0.85	40.23
1879	8.73	8.87	14.62	6.57	2.91	0.27	0.00	0.00	0.00	2.94	4.68	9.16	58.75
1880	4.53	6.60	2.85	21.09	4.29	0.00	0.00	0.00	0.00	T.	0.00	16.47	56.83
1881	15.59	9.30	3.83	1.53	T.	1.31	0.00	0.00	1.63	1.38	3.40	8.01	45.98
1882	9.09	7.11	6.97	3.96	1.13	0.13	0.00	0.00	0.40	2.96	4.03	3.60	39.40
1883	1.68	3.23	7.98	2.93	5.92	0.00	0.00	0.00	1.08	2.97	1.34	2.32	29.45
1884	7.57	9.73	12.27	10.94	1.38	3.01	0.00	0.00	0.80	2.55	T.	23.60	71.85
1885	2.85	1.66	0.68	2.29	0.00	1.18	0.00	0.00	0.62	0.00	15.48	6.77	31.53
1886	12.17	0.34	3.69	10.86	1.08	0.00	0.00	0.00	0.00	1.96	0.46	6.12	36.68
1887	2.99	9.24	1.51	4.92	0.72	0.00	0.00	0.00	0.68	0.84	1.61	6.00	28.51
1888	13.28	2.18	2.80	0.95	0.17	2.69	0.00	0.00	0.25	0.10	3.28	9.57	35.27
1889	0.50	0.90	13.90	3.00	9.14	0.25	0.00	0.00	0.00	9.95	9.60	21.85	69.09
1890	17.90	8.00	14.70	3.95	3.85	0.00	0.00	0.00	2.75	T.	0.00	4.34	55.49
1891	1.95	14.60	9.60	2.45	1.70	2.60	0.90	0.00	0.00	0.40	1.06	11.04	46.30
1892	4.85	7.55	7.45	5.73	6.14	0.60	0.00	0.00	[0.53]	2.20	1.55	16.95	53.55
1893	7.62	5.68	12.80	4.22	1.30	0.00	0.00	0.00	0.85	1.23	9.32	5.08	48.10
1894	13.43	9.76	3.63	[4.48]	3.45	2.45	0.00	0.03	1.00	5.75	0.00	24.17	68.10
1895	16.47	5.55	4.76	0.00	4.80	0.00	0.00	0.28	2.29	0.00	1.77	8.85	44.77
1896	23.23	0.93	6.36	16.15	5.39	0.00	0.00	0.10	1.64	1.62	14.39	5.58	75.39
1897	4.15	15.86	7.46	0.00	0.00	0.85	0.00	0.00	T.	3.86	3.28	5.80	41.26
1898	1.80	9.61	1.89	1.38	2.98	1.50	0.00	0.00	0.36	1.42	4.46	3.01	28.41
1899	9.29	0.87	20.73	1.16	2.41	1.72	0.00	0.30	0.00	9.63	13.06	12.83	72.00
1900	6.41	4.38	7.79	5.74	3.12	0.10	0.00	0.00	1.00	7.33	12.27	3.96	52.10
Mean 31 (years)	8.75	6.62	7.26	4.42	2.39	0.64	0.03	0.02	0.53	2.37	4.93	8.68	46.63

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

COLTON, SAN BERNARDINO COUNTY.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877	1.64	T.	1.72	1.00	1.58	0.00	0.00	0.00	0.00	0.07	0.35	1.98	8.29
1878	1.94	5.16	1.38	2.99	0.71	0.00	0.00	0.00	0.00	0.24	0.30	1.68	14.40
1879	1.79	0.74	0.08	1.75	0.10	0.08	0.00	0.00	0.00	0.13	1.15	2.49	8.26
1880	0.99	0.76	1.05	2.19	0.00	0.00	0.00	0.00	0.00	0.13	0.27	2.37	7.76
1881	0.74	0.90	1.39	0.28	0.00	0.00	0.00	0.00	0.00	0.28	0.38	0.00	3.97
1882	2.23	1.28	1.51	1.08	0.00	0.50	0.50	0.00	0.00	0.50	0.19	0.30	8.09
1883	0.52	1.72	1.00	0.45	0.75	0.00	0.00	0.00	0.00	0.60	0.00	2.23	7.27
1884	1.00	11.38	4.05	2.85	2.90	0.32	0.00	0.25	0.00	0.25	0.12	3.93	27.05
1885	1.00	0.00	0.00	2.08	0.22	0.00	0.00	0.00	0.00	0.00	1.92	0.52	5.74
1886	2.78	0.40	3.54	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	8.02
1887	0.21	3.64	0.00	1.94	T.	0.00	0.00	0.00	0.00	0.00	0.70	0.80	a7.29
1888	4.89	0.42	3.68	0.43	0.00	0.00	0.00	0.00	0.00	0.00	2.37	3.26	15.05
1889	0.86	0.88	4.47	1.02	0.60	0.00	0.00	T.	0.04	1.59	1.26	7.41	18.13
1890	2.94	1.15	0.50	0.00	0.00	0.00	0.00	0.06	0.67	0.00	0.19	2.45	7.96
1891	0.00	6.48	0.25	0.80	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.87	9.30
1892	2.27	3.86	0.80	0.24	1.44	0.00	0.00	0.00	0.00	[0.48]	0.90	1.45	10.94
1893	2.40	2.91	6.64	0.16	0.00	0.00	0.30	0.00	0.00	1.18	0.22	1.93	15.74
1894	0.20	0.55	2.00	0.10	0.50	0.00	0.00	0.00	0.45	0.15	0.00	5.70	9.65
1895	6.88	1.01	2.94	1.08	1.05	0.00	0.00	0.00	0.00	0.00	1.16	0.00	14.12
1896	1.10	0.00	2.91	0.25	0.38	0.00	0.00	0.10	[0.06]	2.28	0.94	1.11	9.13
1897	3.52	3.96	2.70	0.00	0.15	0.85	0.00	0.00	0.00	2.20	[0.66]	0.30	14.34
1898	1.48	0.23	0.80	0.10	0.34	0.00	0.00	0.00	0.00	T.	T.	0.45	3.40
1899	1.57	0.45	1.55	0.00	0.00	T.	0.00	0.00	0.00	0.00	1.96	0.55	6.08
1900	1.06	0.00	0.95	1.59	0.89	0.00	0.00	0.00	T.	0.32	6.47	0.00	11.28
Mean (24 years)	1.83	1.97	1.91	0.95	0.52	0.07	0.03	0.02	0.05	0.43	0.93	1.74	10.47

CORNING, TEHAMA COUNTY.

1886	5.68	0.00	1.41	3.45	0.58	0.00	0.00	0.00	0.00	0.30	0.00	2.01	13.43
1887	0.45	6.81	1.46	2.86	0.28	0.18	0.00	0.00	0.00	0.00	1.37	3.70	17.11
1888	3.64	2.09	3.20	0.19	0.40	0.79	T.	0.00	0.52	0.00	3.34	5.37	19.54
1889	0.27	0.76	4.37	0.55	1.38	0.65	0.00	0.00	0.00	5.74	3.26	10.11	27.09
1890	5.10	2.28	4.56	1.25	2.34	0.00	0.00	0.00	0.78	0.00	0.00	2.26	18.57
1891	0.70	11.80	1.52	2.13	1.15	0.45	0.00	0.00	0.00	0.50	0.10	2.91	21.26
1892	3.25	1.35	2.20	1.41	1.63	0.05	0.00	0.00	0.00	0.14	9.07	2.51	21.61
1893	2.42	3.00	5.00	1.80	0.22	0.00	0.00	0.00	0.22	0.00	2.60	2.22	17.48
1894	3.90	4.30	0.85	0.40	1.30	0.00	0.00	0.00	[0.23]	0.85	0.00	10.85	22.68
1895	14.62	2.83	3.42	0.90	0.20	0.00	0.00	0.00	[0.23]	0.00	1.25	2.17	25.62
1896	12.40	T.	3.95	3.95	1.30	0.00	0.00	0.42	0.75	0.75	3.08	7.40	34.00
1897	2.29	5.69	1.90	1.63	T.	0.60	0.00	0.00	0.00	2.18	0.65	1.60	16.54
1898	0.20	3.20	0.00	T.	1.28	0.00	0.00	0.00	0.38	0.75	0.72	1.05	7.58
1899	8.13	0.00	3.03	0.95	1.15	0.18	0.00	0.00	0.00	6.76	4.10	3.42	27.72
1900	4.61	1.34	1.60	2.84	0.76	0.30	0.00	0.00	0.00	4.05	3.80	2.25	21.55
Mean (15 years)	4.51	3.03	2.56	1.62	0.93	0.21	T.	0.03	0.21	1.47	2.22	3.99	20.79

a Approximated.

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

DAVISVILLE, YOLO COUNTY.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1872	4.34	1.92	0.06	0.00	0.11	T.	0.00	T.	T.	0.00	1.50	6.50	14.43
1873	1.00	2.26	0.50	0.19	0.00	0.00	0.00	0.00	0.00	0.20	0.27	9.68	14.10
1874	3.39	1.46	2.50	0.55	0.25	0.00	0.00	0.00	0.00	1.60	2.50	0.10	12.35
1875	5.75	0.00	0.38	0.00	0.10	0.75	0.00	0.00	0.00	0.16	3.86	2.60	13.60
1876	3.53	3.69	3.67	1.01	0.20	0.00	0.20	0.02	T.	0.00	0.00	0.00	12.32
1877	2.84	1.12	0.50	0.12	0.32	0.00	T.	0.00	0.00	0.73	0.34	1.00	6.97
1878	8.72	6.49	1.75	0.66	0.31	0.00	0.00	0.00	0.15	0.34	1.00	0.19	19.61
1879	2.38	2.65	3.80	1.04	1.20	0.18	0.00	0.00	0.00	0.36	1.79	2.72	16.12
1880	1.80	1.17	1.16	7.46	0.57	0.00	0.00	0.00	0.00	0.00	0.00	10.47	22.68
1881	3.94	2.12	1.19	1.13	0.00	0.60	0.00	0.00	0.23	0.28	1.65	2.38	12.92
1882	1.28	1.92	2.76	1.13	0.00	0.00	0.00	0.00	0.19	1.78	2.84	0.68	12.58
1883	2.20	0.71	3.19	1.00	3.19	0.00	0.00	0.00	0.72	0.90	0.35	0.43	12.69
1884	3.07	3.78	5.09	3.07	0.00	1.39	0.00	0.00	0.28	1.48	0.00	5.25	23.41
1885	1.32	0.14	0.10	1.22	0.00	0.00	0.00	0.00	0.05	0.00	7.87	4.56	15.26
1886	5.32	0.20	1.70	4.75	0.05	0.00	0.00	0.00	0.00	0.48	0.00	1.81	14.31
1887	0.99	6.14	0.78	2.03	0.00	0.00	0.00	0.00	0.05	0.00	0.50	2.52	13.01
1888	4.23	1.10	2.80	0.30	0.50	0.00	0.00	0.00	0.65	0.00	5.06	4.20	18.84
1889	0.20	0.41	6.62	1.17	1.48	0.34	0.00	0.00	0.00	8.14	3.04	9.02	30.42
1890	6.36	3.69	3.35	1.60	2.21	0.00	0.00	0.00	0.62	0.00	0.00	5.28	23.11
1891	1.10	10.55	1.45	1.68	0.70	0.00	0.00	0.00	0.00	0.00	0.47	2.51	18.46
1892	1.72	2.05	2.67	0.92	2.08	0.00	0.00	0.00	0.00	0.51	2.78	6.77	19.50
1893	3.45	4.09	4.32	0.85	1.56	0.00	0.00	0.00	0.00	0.10	2.97	2.01	19.33
1894	3.50	2.05	0.94	0.30	1.64	1.65	0.00	0.00	0.93	1.01	0.35	7.59	19.96
1895	8.47	1.85	1.30	0.64	0.44	0.00	0.50	0.00	1.00	T.	1.16	1.03	16.39
1896	9.24	0.15	2.06	5.86	0.71	0.00	0.00	0.32	0.98	1.02	3.74	2.23	26.31
1897	3.23	4.13	2.63	0.28	0.23	0.03	0.00	0.00	T.	1.66	0.63	1.06	13.88
1898	1.11	3.07	0.04	0.24	1.15	0.00	0.00	0.00	0.25	0.30	0.46	1.58	8.20
1899	3.82	T.	5.67	T.	0.31	0.80	0.00	0.02	0.00	3.88	1.88	1.42	17.80
1900	3.55	0.20	0.96	0.98	0.40	T.	0.00	0.00	0.00	0.38	4.08	0.94	11.49
Mean (29 years)	3.51	2.38	2.20	1.39	0.68	0.18	0.02	0.01	0.21	0.87	1.76	3.33	16.55

DELANO, KERN COUNTY.

1876	1.23	1.82	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	4.10
1877	0.55	0.49	1.63	1.02	0.23	0.00	0.00	0.00	0.00	0.00	0.36	0.56	4.84
1878	1.25	1.96	1.55	1.41	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	6.24
1879	0.18	0.10	0.07	0.93	0.06	0.00	0.00	0.00	0.00	0.43	0.74	1.16	3.67
1880	0.55	2.97	0.30	2.40	0.20	0.00	0.00	0.00	0.00	0.00	0.05	2.60	9.07
1881	1.85	0.60	1.10	0.50	0.05	0.00	0.00	0.00	0.02	0.30	0.42	T.	4.84
1882	0.51	1.20	0.83	0.83	0.50	0.00	0.00	0.00	0.05	0.55	1.00	0.00	5.37
1883	0.00	0.40	0.83	0.50	3.58	0.00	0.00	0.00	0.00	0.26	0.00	0.49	6.06
1884	1.61	2.38	1.98	2.31	2.27	0.22	0.00	0.00	0.00	0.00	0.16	2.16	13.09
1885	0.13	0.00	0.36	1.15	0.03	0.00	0.00	0.00	0.00	0.15	3.55	1.60	6.97
1886	0.75	0.20	0.80	1.54	0.00	0.00	0.00	0.00	0.00	T.	0.69	0.34	4.32
1887	0.20	2.63	0.00	1.44	0.68	0.00	0.00	0.00	0.00	0.00	0.03	0.60	5.58
1888	2.21	0.10	0.94	0.00	0.15	0.00	0.00	0.00	0.00	0.00	1.15	1.19	6.10
1889	0.63	0.05	2.10	0.22	0.16	0.00	0.00	0.00	0.00	2.46	0.56	1.93	8.11
1890	2.67	0.62	0.42	0.08	0.61	0.00	0.00	0.00	0.52	0.00	0.19	1.31	6.42
1891	0.18	1.99	0.57	0.27	0.05	0.19	0.00	0.00	0.38	0.00	0.16	1.60	5.39
1892	0.42	0.85	2.07	0.13	0.43	0.37	0.00	0.00	0.00	0.32	0.35	0.98	5.92
1893	0.59	1.10	2.42	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.30	1.33	5.98
1894	0.47	0.45	0.64	0.16	0.07	0.55	0.00	0.00	0.35	0.16	0.00	1.75	4.60
1895	2.79	0.63	0.34	0.31	0.33	0.00	0.00	0.00	T.	0.65	0.90	0.12	6.07
1896	1.25	0.00	0.84	0.28	0.00	0.00	0.25	0.00	0.00	0.73	0.62	0.70	4.67
1897	1.35	2.29	0.86	0.18	0.00	0.00	0.00	0.00	0.00	0.88	0.14	0.31	6.01
1898	0.78	0.62	0.38	0.00	0.25	0.00	0.00	0.00	2.78	T.	T.	0.30	5.11
1899	0.68	T.	1.39	0.08	0.09	1.25	0.00	T.	0.00	0.78	1.29	1.01	6.57
1900	0.69	0.97	0.51	0.89	0.91	0.00	0.00	0.00	T.	0.00	2.20	0.14	6.31
Mean (25 years)	0.94	0.97	0.95	0.67	0.43	0.10	0.01	T.	4.10	7.97	15.22	22.18	6.06

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

DELTA.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1883	1.00	0.00	14.46	8.49	9.94	0.00	0.00	0.00	0.00	6.18	1.10	4.24	45.41
1884	15.57	4.55	13.44	16.55	2.73	7.12	0.25	0.00	1.03	6.01	0.56	16.24	84.05
1885	2.91	2.53	0.37	2.54	0.67	1.60	0.00	0.00	0.00	0.60	29.38	12.94	53.54
1886	9.95	0.50	3.52	10.19	8.16	0.60	0.00	0.00	T.	1.30	0.30	8.81	43.33
1887	3.84	10.27	3.37	5.53	1.26	0.82	0.00	0.00	0.00	0.00	0.75	2.23	28.07
1888	10.40	4.67	1.70	0.00	2.45	3.30	0.00	0.00	0.16	7.14	7.18	10.56	47.56
1889	0.15	1.02	37.52	2.91	5.81	1.07	0.00	0.00	0.00	26.71	10.03	25.83	111.05
1890	17.18	21.11	16.50	4.78	2.33	0.00	0.00	0.00	1.00	0.40	0.00	7.24	70.54
1891	3.72	13.70	2.06	8.95	4.76	1.98	0.75	0.00	1.31	2.24	1.99	7.21	48.67
1892	5.55	4.01	8.34	6.31	5.22	0.04	0.10	0.00	1.52	3.40	13.08	19.51	67.08
1893	3.17	2.10	11.90	8.90	3.80	0.00	T.	0.00	2.85	0.15	8.05	3.60	44.02
1894	14.30	3.70	2.60	2.75	3.50	2.25	0.00	T.	4.00	7.33	3.30	33.17	76.90
1895	18.55	7.93	7.72	1.71	4.08	0.00	1.07	0.00	5.18	0.00	2.15	6.38	53.87
1896	31.42	0.60	11.81	16.72	6.92	0.07	0.00	T.	T.	3.50	12.00	17.23	100.27
1897	4.06	7.13	4.63	1.30	0.00	2.75	0.00	0.00	0.00	3.40	3.55	6.05	33.47
1898	0.75	13.55	0.00	1.35	5.85	1.40	0.00	0.00	0.00	1.95	3.35	2.00	30.20
1899	8.19	5.95	11.81	0.65	1.10	4.05	0.00	0.00	0.00	9.85	19.60	6.40	67.60
1900	12.25	4.60	9.45	8.59	4.10	1.56	0.17	0.20	0.97	15.68	10.51	8.04	76.12
Mean (18 years)	9.09	5.95	8.96	6.01	4.01	1.59	0.13	0.01	1.00	5.82	7.05	10.98	60.10

DUNNIGAN, YOLO COUNTY.

1877	2.10	0.86	0.31	0.00	0.12	0.00	T.	0.00	0.00	0.69	0.92	0.83	5.92
1878	10.50	6.28	1.94	0.44	0.52	0.00	0.00	0.00	0.00	0.52	0.81	0.01	21.02
1879	2.35	2.10	4.39	1.22	0.86	0.15	0.00	0.00	0.00	0.06	2.07	2.89	16.09
1880	0.70	0.88	0.87	6.06	0.40	0.00	0.00	0.00	0.00	0.00	0.05	10.23	19.19
1881	5.67	1.45	0.67	1.23	0.20	0.15	0.00	0.00	0.77	0.38	0.52	3.22	14.26
1882	1.00	2.04	2.33	1.23	0.00	0.12	0.00	0.00	0.42	1.19	2.63	0.55	11.51
1883	2.05	0.35	3.65	0.72	4.67	0.00	0.00	0.00	0.53	0.72	0.45	0.35	13.49
1884	2.36	3.21	5.78	2.78	T.	2.59	0.00	0.00	0.04	1.28	0.00	7.16	25.20
1885	1.66	0.32	0.13	1.10	0.00	0.00	0.00	0.00	0.05	1.45	10.47	3.68	18.86
1886	8.37	T.	1.69	3.61	0.18	0.00	0.00	0.00	0.00	0.51	T.	1.91	16.27
1887	0.97	6.93	1.13	2.41	0.00	0.00	0.00	0.00	0.00	0.00	0.83	3.30	15.57
1888	4.18	1.03	3.39	0.00	1.62	0.00	0.00	0.00	0.59	0.00	4.59	5.88	21.28
1889	0.27	0.60	6.17	1.49	1.46	0.28	0.00	0.00	0.00	6.39	3.59	9.66	29.91
1890	7.22	3.62	3.90	1.16	1.91	0.00	0.00	0.00	0.64	0.00	0.00	3.18	21.63
1891	0.59	9.60	0.66	9.09	1.75	0.00	0.00	0.00	0.45	0.00	0.48	3.18	18.80
1892	2.66	2.25	2.78	0.87	2.18	0.00	0.00	0.00	0.00	1.12	6.92	9.17	27.95
1893	3.46	3.64	4.64	0.94	0.69	0.00	0.00	0.00	0.00	0.00	1.60	1.30	16.27
1894	5.78	2.06	0.93	0.48	1.78	0.36	0.00	0.00	1.00	1.76	0.28	11.22	25.65
1895	10.38	0.76	1.23	1.46	0.30	0.00	0.04	0.00	1.59	0.38	1.41	1.26	18.81
1896	15.13	0.11	2.80	5.45	0.79	0.00	0.04	0.37	0.48	1.30	3.65	4.32	34.44
1897	3.90	4.99	1.52	0.42	0.26	0.35	0.00	T.	0.08	2.00	0.49	1.69	15.70
1898	2.08	3.24	0.25	0.14	1.67	0.09	0.00	0.00	1.95	0.60	0.35	1.28	11.60
1899	7.00	T.	4.29	0.30	0.44	0.61	0.00	0.00	0.00	3.33	3.39	3.65	23.01
1900	4.15	0.10	2.10	1.48	0.86	0.00	0.00	0.00	T.	1.01	4.27	2.05	16.02
Mean (24 years)	4.36	2.35	2.40	1.54	0.94	0.20	T.	0.02	0.36	1.03	2.07	3.83	19.10

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

DUNSMUIR, SISKIYOU COUNTY.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	1.30	0.33	4.89	2.43	7.06	1.12	0.00	0.00	0.00	20.15	11.65	20.57	69.00
1890	23.60	16.50	11.85	11.85	2.45	0.40	0.00	0.05	0.90	0.00	0.00	8.05	75.60
1891	0.55	2.59	2.70	4.95	3.07	2.88	0.67	0.07	1.52	2.13	2.32	9.65	33.10
1892	2.41	3.31	5.30	5.48	3.96	1.22	0.35	0.00	0.05	2.68	7.47	14.03	46.26
1893	3.65	6.40	13.30	8.75	4.06	0.00	0.20	0.00	3.27	1.15	11.35	5.08	57.21
1894	17.53	7.60	6.05	1.70	4.35	2.10	0.00	0.20	0.20	9.65	2.90	29.30	81.58
1895	15.30	6.50	8.15	2.55	4.40	0.00	1.55	0.00	5.75	0.05	1.40	4.39	50.09
1896	22.25	1.54	10.23	11.43	6.22	0.17	0.34	0.00	1.46	0.00	11.07	13.94	78.65
1897	4.08	10.63	6.33	1.02	0.14	2.35	0.00	0.00	0.00	2.78	4.34	4.98	36.65
1898	9.76	10.62	0.00	1.20	4.20	1.50	0.00	0.00	0.53	1.71	2.98	11.43	43.93
1899	6.80	0.50	10.31	0.48	1.60	1.90	0.00	0.90	T.	7.10	15.29	7.40	52.28
1900	9.93	3.32	6.27	4.85	3.18	0.90	0.00	T.	1.20	6.13	7.16	8.29	51.23
Mean (12 years)	9.76	5.82	7.07	4.72	3.72	1.21	0.26	0.10	1.24	4.46	6.49	11.48	56.30

ELDORADO, ELDORADO COUNTY.

[Elevation, 1,609 feet.]

1889	0.31	0.38	8.41	1.60	7.50	0.12	0.00	0.00	0.00	7.46	6.32	14.94	47.04
1890	12.48	5.74	10.09	3.00	3.45	0.00	0.00	.....	1.77	0.10	0.00	5.48	42.11
1891	1.07	6.93	6.71	3.52	0.93	0.95	0.00	0.00	0.09	0.85	1.08	9.09	31.22
1892	3.48	5.75	7.24	3.61	4.91	0.15	0.00	0.00	0.08	2.04	7.80	10.33	45.39
1893	5.40	2.56	8.02	3.13	1.51	0.00	0.00	0.00	1.14	0.65	4.58	4.26	31.25
1894	8.74	11.90	2.25	1.63	3.98	1.00	0.00	0.00	0.67	3.52	1.05	14.37	49.11
1895	13.80	4.18	3.94	4.06	2.34	0.00	0.00	0.00	1.41	0.00	0.78	3.79	34.30
1896	13.82	0.15	7.80	9.56	2.59	0.00	0.00	0.03	0.41	1.00	9.49	3.62	48.47
1897	3.51	4.50	7.63	1.65	0.23	0.55	0.00	0.00	0.17	2.54	2.21	2.88	25.87
1898	1.43	6.19	0.86	0.53	2.67	0.60	0.00	0.00	0.37	0.95	2.45	2.70	18.75
1899	4.60	0.57	13.10	1.02	1.80	1.57	0.00	0.06	0.00	7.18	6.19	6.73	42.82
1900	3.87	1.99	5.15	3.40	1.70	0.00	0.00	0.00	0.10	3.26	8.11	2.23	29.81
Mean (12 years)	6.04	4.24	6.77	3.06	2.80	0.41	0.00	0.01	0.52	2.46	4.17	6.70	37.18

ELMIRA, SOLANO COUNTY.

[Elevation, 75 feet.]

1886	8.01	0.00	1.35	4.22	0.14	0.00	0.00	0.00	0.00	0.38	0.00	2.72	16.82
1887	1.01	7.10	0.55	2.06	0.00	0.00	0.00	0.00	0.00	0.00	0.76	3.41	14.89
1888	4.81	1.49	3.92	T.	0.45	0.19	0.00	0.00	0.08	0.00	0.28	4.47	15.69
1889	0.32	0.88	6.32	0.59	1.67	0.15	0.00	0.00	0.00	6.54	0.20	9.96	26.63
1890	8.68	4.08	5.26	1.05	1.86	0.00	0.00	0.00	0.35	0.00	0.00	3.74	25.02
1891	0.75	8.87	1.65	1.72	0.50	0.00	0.00	0.00	0.35	0.00	0.27	4.92	19.03
1892	2.81	4.04	1.94	1.77	2.82	0.00	0.00	0.00	0.08	0.84	5.00	8.19	27.49
1893	4.71	2.85	4.40	0.90	0.76	0.00	0.00	0.00	0.16	0.18	3.02	1.76	18.74
1894	8.12	4.20	0.97	0.57	1.08	0.63	0.00	0.00	1.44	3.17	0.51	12.83	33.52
1895	11.61	3.11	1.50	1.57	0.68	0.00	0.00	0.00	0.87	0.04	2.38	1.91	23.67
1896	16.16	0.31	4.63	7.68	0.87	0.00	0.00	0.60	0.30	1.15	6.14	3.49	41.33
1897	3.72	7.15	4.52	0.39	0.00	0.03	0.00	0.00	0.06	2.34	0.79	2.25	21.25
1898	0.93	3.33	0.19	0.46	1.33	0.00	0.00	0.00	0.19	0.27	0.22	1.86	8.28
1899	5.33	0.00	7.60	0.58	0.03	1.41	0.00	0.21	0.00	4.18	3.31	3.50	26.15
1900	3.36	0.43	1.91	1.18	0.58	0.00	0.00	0.00	0.00	1.04	5.89	1.41	15.80
Mean (15 years)	5.36	3.19	3.11	1.65	0.85	0.16	0.00	0.05	0.26	1.34	1.92	4.39	22.29

PRECIPITATION OF CALIFORNIA. (INCHES AND HUNDREDTHS)—Continued.

FALLBROOK, SAN DIEGO COUNTY.

[Elevation, 700 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1876	6.17	3.78	2.77	0.15	0.61	0.00	0.15	0.00	0.20	0.23	0.07	0.08	14.21
1877	3.41	0.59	2.28	0.55	1.11	0.00	0.00	T.	0.00	0.59	0.58	4.02	13.13
1878	3.19	8.01	2.08	4.63	1.41	0.33	0.00	T.	0.00	0.32	0.25	1.64	21.86
1879	3.21	0.90	0.29	0.83	0.03	0.23	0.00	0.05	0.00	0.42	3.61	5.87	15.44
1880	1.46	1.86	2.12	4.99	0.05	0.02	0.03	0.26	[0.11]	[0.74]	[1.27]	[3.22]	16.13
1881	[3.51]	0.73	2.93	0.67	0.00	0.00	0.00	0.00	0.00	0.57	0.24	0.35	9.00
1882	2.65	4.02	2.42	1.64	0.09	0.26	T.	0.12	0.03	0.70	1.01	0.33	13.27
1883	3.46	2.68	1.89	1.23	1.87	0.00	0.00	0.00	0.00	2.96	0.00	3.32	17.41
1884	3.56	15.36	10.90	3.13	1.02	0.52	0.00	0.02	0.20	0.53	0.54	7.07	42.85
1885	0.92	0.13	0.29	2.60	0.29	0.11	0.00	0.02	0.00	0.00	5.92	1.13	11.41
1886	9.76	1.13	4.70	3.43	0.00	0.14	T.	0.11	0.12	0.04	1.95	0.30	21.68
1887	0.28	5.65	0.05	2.02	0.24	0.06	0.05	0.00	0.83	0.20	2.03	3.56	14.97
1888	3.89	2.55	5.88	0.28	0.81	0.02	0.03	0.00	0.00	0.80	3.48	6.13	23.87
1889	1.49	2.35	7.97	0.63	0.47	0.11	0.00	0.07	0.05	2.11	0.58	15.53	31.36
1890	5.14	2.22	0.80	0.09	0.30	0.02	0.00	0.26	0.49	0.00	0.58	3.22	13.12
1891	0.40	11.93	0.56	1.35	0.89	0.00	0.02	0.00	0.13	0.02	0.01	2.64	17.95
1892	1.10	4.59	2.71	0.62	1.46	0.19	0.00	0.00	0.00	0.32	2.85	2.14	15.98
1893	3.40	3.72	8.06	0.49	0.29	0.00	0.13	0.00	0.06	0.86	1.46	3.58	22.05
1894	0.87	1.10	1.36	0.08	0.31	0.00	0.04	0.18	0.38	0.06	0.00	6.09	10.47
1895	12.52	1.59	2.14	0.61	0.24	0.00	0.00	0.00	0.00	0.06	1.46	0.47	19.09
1896	3.45	T.	3.44	0.26	0.13	0.00	0.05	0.05	0.00	2.68	1.22	2.13	13.41
1897	4.20	6.61	4.37	0.06	0.21	0.00	0.01	T.	T.	2.82	0.17	0.38	18.83
1898	2.65	0.71	1.48	0.46	2.23	0.07	T.	T.	T.	0.00	0.02	1.04	8.66
1899	3.51	0.66	2.23	0.16	0.18	0.90	0.00	0.03	0.00	1.25	2.90	2.22	14.04
1900	3.26	0.29	0.76	1.00	1.76	T.	0.00	0.00	0.06	0.23	5.06	0.00	12.42
Mean (25 years)	3.50	3.33	2.98	1.28	0.64	0.12	0.02	0.05	0.11	0.74	1.49	3.06	17.80

FARMINGTON, SAN JOAQUIN COUNTY.

[Elevation, 111 feet.]

1877	5.71	5.07	0.86	1.25	0.29	0.04	0.00	0.00	0.00	0.19	0.90	1.62	15.93
1878	6.43	4.91	3.05	0.63	0.00	0.00	0.00	0.00	T.	0.55	0.51	0.41	16.49
1879	2.73	2.81	3.15	1.99	1.01	0.30	0.00	0.00	0.00	0.70	0.86	2.25	15.80
1880	1.63	1.80	1.08	7.31	1.31	0.00	0.00	0.00	0.00	T.	0.40	6.04	19.57
1881	2.40	2.78	1.30	0.18	0.00	0.10	0.00	0.00	0.17	0.44	0.55	1.62	9.54
1882	2.10	2.35	3.05	2.55	0.13	0.13	0.00	0.00	0.30	2.23	1.90	1.51	16.25
1883	2.70	0.78	2.90	1.42	3.06	0.00	0.00	0.00	0.76	1.66	0.79	0.73	14.80
1884	1.44	5.04	6.53	4.72	0.35	1.32	0.00	0.00	0.09	1.15	0.00	6.21	26.85
1885	1.03	0.00	0.16	0.46	0.00	0.17	0.00	T.	T.	0.00	6.95	1.37	10.14
1886	4.60	0.41	1.87	5.01	0.19	0.00	0.00	0.00	0.00	0.27	0.89	1.37	14.61
1887	0.36	3.37	0.29	2.89	0.00	T.	0.00	0.00	0.39	T.	0.20	2.32	9.82
1888	3.82	0.15	3.52	0.07	0.92	0.00	T.	0.00	0.66	0.00	2.93	1.75	13.82
1889	0.30	0.70	3.07	0.20	1.88	T.	0.00	0.00	0.00	2.82	3.22	8.00	20.19
1890	4.63	1.87	1.78	1.37	1.14	0.00	0.00	0.00	0.63	0.00	0.00	1.96	13.38
1891	0.43	6.35	4.04	1.65	0.40	0.00	0.00	0.00	0.00	0.08	0.24	4.01	17.20
1892	0.97	2.20	2.88	1.23	2.59	0.18	0.00	0.00	0.18	0.69	2.38	6.70	20.00
1893	3.27	2.41	6.16	0.92	0.40	0.00	0.00	0.00	0.46	0.00	2.19	1.65	17.46
1894	5.17	5.17	0.13	0.50	2.80	0.68	0.00	0.00	0.75	1.51	0.72	7.74	25.17
1895	6.01	2.29	1.46	0.53	0.45	0.00	0.00	0.00	0.03	0.19	1.49	1.26	13.71
1896	6.20	0.27	1.89	4.13	0.55	0.00	0.00	0.00	0.00	1.40	3.72	1.77	19.93
1897	3.09	5.03	2.92	0.42	0.30	0.00	0.00	0.00	0.00	1.69	0.74	1.38	15.57
1898	0.76	2.02	0.97	0.20	1.54	0.00	0.00	0.00	0.58	0.66	0.80	1.53	9.06
1899	3.00	0.14	5.33	0.78	1.07	0.10	0.00	0.10	0.00	3.77	3.08	2.33	19.70
1900	1.75	0.40	1.28	3.77	1.56	0.00	0.00	0.00	T.	1.44	5.62	1.01	16.83
Mean (24 years)	2.94	2.43	2.49	1.84	0.91	0.13	T.	T.	0.21	0.89	1.71	2.77	16.83

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

FERNANDO, LOS ANGELES COUNTY.

[Elevation, 1,066 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	4.15	6.89	2.08	2.55	0.36	0.00	0.00	0.00	0.00	0.16	0.09	1.20	17.48
1879	3.97	0.86	0.18	1.41	0.00	0.00	0.00	0.00	0.00	0.33	2.15	6.29	15.19
1880	0.94	2.00	1.14	2.97	0.00	0.00	0.00	0.00	0.00	0.00	0.86	4.72	12.63
1881	1.28	0.34	1.75	0.50	0.00	0.00	0.00	0.00	0.00	0.95	0.16	0.32	5.30
1882	0.62	1.70	3.21	1.56	0.10	0.00	0.00	0.00	0.00	0.28	0.68	0.00	8.15
1883	1.32	3.17	1.30	0.13	2.12	0.00	0.00	0.00	0.00	0.70	0.00	2.76	11.50
1884	3.00	10.60	10.51	3.48	1.05	2.00	0.00	0.00	0.00	0.42	1.00	4.96	37.02
1885	0.90	0 00	T.	1.48	0.21	0.00	0.00	0.00	0.00	0.00	7.94	1.17	11.70
1886	6.70	T.	3.36	3.39	0.00	0.00	0.19	T.	0.00	0.78	0.87	0.24	15.53
1887	0.21	8.54	0.27	2.52	T.	0.00	0.00	0.00	[0.04]	0.22	0.90	1.41	14.11
1888	5.09	1.39	3.40	0.44	0.00	0.00	0.00	0.00	0.00	0.36	3.24	5.40	19.32
1889	0.09	0.63	8.95	0.56	0.43	0.00	0.00	0.06	0.32	6.17	1.60	14.40	33.21
1890	5.40	2.72	0.53	0.05	0.10	0.00	0.00	0.00	0.36	0.00	0.18	1.61	10.95
1891	0.30	6.32	1.23	0.96	0.98	0.00	0.00	0.00	0.12	0.00	0.00	1.03	10.94
1892	0.57	2.53	2.65	0.21	1.68	0.00	0.00	0.00	0.00	0.40	1.48	4.40	13.92
1893	2.63	3.67	6.93	0.56	0.08	0.00	0.00	0.00	0.00	0.61	0.05	2.23	16.76
1894	0 59	0.61	0.75	0.24	0.32	0.00	0.00	0.00	0.00	0.02	0.00	5.82	8.35
1895	7.62	0.54	3.72	0.55	0.28	0.00	0.00	0.00	0.00	0.21	0.90	0.61	14.43
1896	2.42	0.05	3.32	0.29	0.15	0.00	0.00	0.33	0.00	1.48	0.96	2.12	11.12
1897	5.39	5.58	2.88	0.00	0.00	0.00	0.00	0.00	0.00	1.66	0.00	0.00	15.51
1898	1.42	0.57	0.86	0.10	1.42	0.00	0.17	0.00	0.10	0.25	0.00	0.20	5.09
1899	1.29	0.00	1.45	0.00	T.	0.68	0.00	0.00	0.00	1.65	0.82	1.04	6.93
1900	1.31	0.00	1.45	0.25	1.87	0.00	0.00	0.00	T.	0.14	6.19	0.00	11.21
Mean (23 years)	2.49	2.55	2.69	1.05	0.44	0.12	0.02	0.02	0.04	0.73	1.31	2.69	14.19

FOLSOM, SACRAMENTO COUNTY.

[Elevation, 252 feet.]

1872	5.50	4.72	1.60	0.63	0.75	T.	0.00	T.	T.	0.25	2.80	6.53	22.78
1873	1.64	4.05	0.34	0.05	0.03	0.00	0.01	T.	T.	T.	1.39	10.51	18.02
1874	5.26	2.63	1.82	2.03	0.81	T.	T.	0.00	T.	1.66	5.19	0.13	19.53
1875	6.14	0.04	1.24	T.	0.07	1.23	0.00	0.00	0.00	0.26	7.12	4.49	20.59
1876	5.89	4.06	6.62	1.56	0.24	T.	0.26	0.03	0.00	3.76	0.25	0.00	22.67
1877	3.38	0.68	0.81	T.	1.02	T.	T.	T.	0.00	0.75	0.54	1.34	8.52
1878	8.41	8.37	4.23	1.10	0.26	0.00	0.00	T.	0.12	0.43	0.62	0.56	24.10
1879	4.87	4.94	5.43	3.38	1.44	0.12	0.00	T.	0.00	1.21	2.20	3.19	26.78
1880	1.51	2.13	1.40	11.39	2.06	0.00	T.	0.00	0.00	T.	0.10	9.85	28.44
1881	6.70	6.07	1.38	1.13	T.	0.68	0.00	0.00	0.40	1.21	1.57	3.45	22.59
1882	2.38	3.01	3.82	2.51	0.27	0.06	T.	0.00	0.68	2.81	3.95	0.74	20.53
1883	2.11	0.80	5.46	1.10	4.57	0.00	0.00	0.00	1.82	1.41	0.81	0.92	19.00
1884	3.88	5.92	8.14	5.32	1.16	1.64	0.00	T.	1.64	2.02	0.00	6.13	34.85
1885	1.91	0.84	0.15	1.68	T.	0.21	0.02	T.	0.21	T.	10.91	4.88	20.81
1886	7.60	0.90	3.16	6.78	0.29	0.00	0.00	0.00	0.00	1.34	0.55	3.35	23.97
1887	1.27	9.21	1.30	2.84	0.03	0.22	0.00	T.	0.38	0.00	0.59	4.82	20.66
1888	5.83	0.84	3.08	0.12	0.35	0.27	0.02	0.01	0.57	0.00	3.71	4.32	19.12
1889	0.32	0.68	7.07	0.61	2.89	0.23	0.00	0.00	0.00	5.70	4.85	9.41	31.76
1890	7.67	5.26	5.68	2.08	2.66	0.00	0.00	0.00	1.13	0.05	0.00	4.25	28.78
1891	0.60	4.56	5.29	2.22	1.58	0.46	0.10	0.00	0.00	0.20	0.78	4.98	20.77
1892	2.56	3.03	4.17	1.85	3.91	0.07	0.00	T.	0.14	1.31	6.82	5.11	28.97
1893	4.42	2.93	6.93	2.00	0.72	0.00	T.	0.00	0.43	0.23	3.94	2.50	24.10
1894	5.89	6.40	1.13	0.51	2.81	0.99	0.01	0.03	0.56	2.76	0.89	11.74	33.72
1895	11.24	2.59	2.53	2.05	1.43	0.00	T.	T.	1.43	0.09	2.06	1.73	25.15
1896	9.11	0.41	4.02	6.44	1.57	0.00	0.00	0.64	0.35	0.90	6.55	1.77	31.80
1897	4.57	7.95	5.26	0.74	0.51	0.03	0.00	0.09	0.10	2.44	1.02	1.90	24.61
1898	0.83	3.90	0.22	0.54	1.35	0.30	0.00	T.	0.24	0.85	1.54	2.47	12.24
1899	4.58	0.07	7.13	0.82	1.17	0.21	0.00	0.06	0.00	5.74	5.45	[4.18]	29.71
1900	4.76	0.91	2.27	2.82	1.66	T.	T.	0.00	0.28	2.17	3.99	1.67	20.53
Means (29 years)	4.52	3.38	3.51	2.22	1.23	0.23	0.01	0.03	0.33	1.36	2.77	4.03	23.61

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

FORT ROSS, SONOMA COUNTY.

[Elevation, 100 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1875	9.15	0.69	3.41	0.00	0.45	1.90	0.00	0.13	0.00	2.57	12.15	6.33	36.78
1876	9.75	9.31	14.44	2.21	1.16	0.23	0.06	0.08	0.71	9.32	0.90	0.15	48.82
1877	9.00	5.49	3.95	0.18	0.80	0.78	0.20	0.00	0.00	2.18	5.33	5.22	33.13
1878	33.29	29.65	13.85	3.14	0.00	0.00	0.00	0.00	2.09	2.79	2.05	1.31	88.17
1879	7.78	11.33	18.43	5.02	2.04	0.00	0.00	0.10	0.00	1.73	15.82	15.47	77.72
1880	6.85	3.53	4.05	16.59	3.13	0.00	0.00	0.00	0.00	0.24	0.00	23.38	57.77
1881	19.99	13.88	2.97	2.51	0.94	1.83	0.00	0.00	0.75	3.10	0.93	13.06	59.96
1882	6.56	11.78	3.01	4.04	0.84	0.13	0.00	0.00	0.57	8.64	5.39	3.49	44.45
1883	6.57	1.40	9.67	3.25	6.50	0.00	0.00	0.00	2.00	2.32	0.49	1.38	33.58
1884	7.16	7.44	10.76	11.79	0.80	4.40	0.00	0.00	0.80	1.85	1.85	19.17	66.02
1885	5.31	3.58	1.45	2.19	0.00	0.33	0.00	0.00	0.55	1.14	18.92	5.98	39.45
1886	14.62	0.25	3.56	8.94	2.04	0.00	0.00	0.00	0.00	1.86	0.26	8.12	39.65
1887	2.61	8.35	1.72	3.48	0.17	0.12	0.00	0.00	0.60	0.00	2.45	4.11	23.61
1888	10.79	2.55	4.61	0.00	0.90	2.49	0.22	0.00	0.58	0.00	4.95	7.71	34.80
1889	0.97	1.77	8.35	1.54	3.17	0.20	0.00	0.00	0.12	10.92	4.02	13.07	44.13
1890	12.44	3.75	9.87	3.44	1.51	0.13	0.00	0.00	0.19	0.10	0.00	6.21	37 64
1891	0.94	12.06	2.11	5.64	1.43	1.07	1.30	0.00	1.47	2.21	2.12	11.70	42.05
1892[a]													
1893	7.19	7.89	15.52	5.22	1.01	0.00	0.00	0.00	1.49	0.60	15.07	8.20	62.19
1894	18.66	6.70	4.25	2.37	3.01	1.86	0.00	0.00	1.79	4.15	1.40	20.81	65.00
1895	28.50	6.02	6.57	2.60	3.84	0.00	1.31	0.00	3.93	0.00	5.34	6.02	64.13
1896	24.04	1.38	5.27	6.58	3.64	0.00	0.00	0.20	0.30	3.79	14.65	13.95	73.80
1897	4.74	11.49	10.95	0.78	0.86	2.27	0.00	0.00	1.05	4.25	3.45	6.16	46.00
1898	2.01	12.94	0.40	0.57	7.61	0.63	0.00	0.00	2.98	1.82	2.74	1.62	33.32
1899	20.83	0.85	16.11	0.95	3.92	0.04	0.00	0.00	0.00	5.05	14.74	7.51	70.00
1900	8.44	4.39	6.01	5.61	1.35	0.44	0.00	0.00	0.11	7.31	6.00	6.33	45.99
Mean (25 years)	11.13	7.14	7.25	3.96	2.04	0.75	0.12	0.02	0.88	3.12	5.64	8.66	50.71

FRUTO, GLENN COUNTY.

[Elevation, 624 feet.]

1889	0.82	1.42	6.38	0.92	1.33	0.40	0.00	0.00	0.00	8.81	2.92	10.38	33.38
1890	7.58	1.94	3.28	0.81	2.11	0.21	0.00	0.00	0.95	0.00	0.00	3.01	19.89
1891	0.43	9.35	0.52	3.42	1.22	0.63	0.00	0.00	0.15	0.00	0.22	4.00	19.94
1892	2.00	3.53	2.68	1.89	4.08	0.25	0.00	0.00	0.00	0.50	5.80	6.80	27.53
1893	2.70	3.80	6.40	1.00	0.80	0.00	0.00	0.00	0.22	0.00	2.80	1.50	19.22
1894	5.35	1.40	0.38	0.50	1.70	0.95	0.00	0.00	0.65	0.80	0.55	9.75	22.03
1895	9.90	1.90	1.80	1.25	0.85	0.00	0.05	0.00	1.05	0.00	1.40	1.57	19.77
1896	10.93	0.12	0.80	4.40	1.23	0.00	0.00	0.65	1.30	1.15	1.95	6.75	29.28
1897	1.95	4.95	1.55	1.10	0.20	1.10	0.00	0.00	0.00	1.03	0.73	0.78	13.39
1898	0.53	2.68	0.05	0.60	1.90	0.00	0.00	0.00	0.50	0.50	0.10	1.07	7.95
1899	7.48	0.00	3.95	0.75	0.75	0.35	0.00	0.00	0.00	2.10	3.72	2.68	21.78
1900	4.20	0.45	1.50	1.70	1.80	0.20	0.00	0.00	0.00	1.90	2.80	2.45	17.00
Mean (12 years)	4.49	2.63	2.44	1.53	1.50	0.34	T.	0.05	0.40	1.40	1.92	4.23	20.98

[a] Data missing.

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

GALT, SACRAMENTO COUNTY.

[Elevation, 49 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	5.62	5.55	3.67	0.89	0.08	0.00	0.00	0.00	0.07	0.27	0.60	0.63	17.38
1879	2.74	3.31	3.00	1.42	1.40	0.10	0.00	0.00	0.00	0.80	1.71	2.51	16.99
1880	1.12	1.39	1.29	7.31	0.27	0.00	0.00	0.00	0.00	0.00	T.	6.35	17.73
1881	4.43	2.57	0.50	1.75	0.00	0.33	0.00	0.00	0.24	0.39	0.93	2.39	13.53
1882	1.35	1.83	3.77	1.87	0.15	0.00	0.00	0.00	0.05	2.17	2.24	0.25	13.68
1883	2.35	0.21	3.15	0.81	4.83	0.00	0.00	0.00	0.62	1.55	0.75	0.85	15.12
1884	1.70	4.09	5.46	2.09	0.58	1.36	0.00	0.00	0.00	1.31	0.00	6.06	22.65
1885	1.30	0.12	0.00	0.82	0.00	0.00	0.00	0.00	0.00	0.00	5.56	2.33	10.13
1886	6.04	0.00	2.69	3.58	0.15	0.00	0.00	0.00	0.00	0.92	0.85	1.76	15.99
1887	0.61	5.35	1.11	2.56	0.00	0.00	0.00	0.00	0.15	0.00	0.38	3.27	13.43
1888	3.97	0.46	3.14	0.40	0.39	0.00	0.00	0.00	0.92	0.00	3.87	3.14	16.29
1889	0.20	0.48	5.36	0.05	2.04	0.08	0.00	0.00	0.00	5.46	3.77	7.64	25.08
1890	6.83	3.31	2.76	1.96	1.87	0.00	0.00	0.00	0.83	0.00	0.00	3.08	20.64
1891	4.31	4.36	2.78	1.43	0.49	0.00	0.00	0.00	0.00	0.07	0.32	4.32	18.08
1892	0.71	1.78	3.76	1.10	3.05	0.00	0.00	0.00	0.10	1.78	5.37	7.96	25.61
1893	3.42	2.89	4.49	2.18	0.62	0.00	0.00	0.00	0.16	0.00	3.52	1.49	18.77
1894	4.02	5.93	0.66	0.61	3.60	0.63	0.00	0.00	1.32	1.11	0.70	9.29	27.87
1895	9.09	3.00	1.66	1.29	0.70	0.00	0.00	0.00	1.05	0.24	1.39	1.47	19.89
1896	10.72	0.02	2.69	5.09	0.91	0.00	0.00	0.32	T.	0.74	4.24	2.46	27.19
1897	2.74	5.87	4.55	0.27	0.27	0.05	0.00	0.00	0.17	1.85	0.49	1.17	17.43
1898	0.72	2.18	[0.15]	[0.30]	[0.60]	[0.05]	0.00	0.00	0.20	0.30	1.15	2.35	8.00
1899	3.50	0.00	8.00	T.	0.30	0.00	0.00	0.00	0.00	4.44	2.90	2.60	21.74
1900	2.40	0.50	1.30	1.60	2.20	0.00	0.00	0.00	0.00	1.30	4.22	1.20	14.72
Mean (23 years)	3.47	2.40	2.87	1.71	1.06	0.11	0.00	0.01	0.26	1.07	1.95	3.28	18.17

GEORGETOWN, ELDORADO COUNTY.

[Elevation, 2,650 feet.]

1873	4.08	13.05	3.05	3.11	0.12	0.00	0.03	0.00	0.00	0.61	0.55	16.60	41.20
1874	16.66	8.03	13.87	5.80	1.32	1.20	0.00	0.00	0.00	3.86	14.60	1.24	65.58
1875	17.87	0.04	5.07	0.31	2.03	2.06	0.00	0.00	0.00	1.90	24.10	10.85	64.25
1876	13.09	9.97	14.54	4.78	1.22	0.00	0.77	0.00	0.00	11.47	0.80	0.00	56.64
1877	12.44	2.14	7.78	1.74	3.87	0.24	0.00	0.00	0.00	1.03	4.30	1.97	35.51
1878	16.21	22.78	10.92	2.99	0.99	0.12	0.00	0.00	0.66	2.56	2.66	0.48	60.37
1879	11.24	12.41	17.57	9.65	3.39	0.34	0.00	0.00	0.00	3.85	6.25	11.73	76.43
1880	5.47	6.00	5.50	25.63	5.97	0.00	0.00	0.00	0.00	0.18	0.37	22.67	71.79
1881	20.83	12.85	3.84	2.40	0.40	2.28	0.00	0.00	2.02	4.23	3.30	10.32	62.47
1882	8.59	5.88	10.44	7.11	2.06	0.18	0.00	0.00	0.16	7.75	7.00	3.31	52.48
1883	4.70	3.08	8.78	3.87	7.34	0.00	0.00	0.00	1.60	4.10	1.94	3.50	38.86
1884	7.53	13.80	19.94	15.07	1.52	3.65	0.00	0.01	0.80	3.54	0.03	33.73	99.62
1885	4.37	0.82	0.24	3.98	0.19	2.28	0.03	0.00	1.16	0.00	20.77	7.03	40.87
1886	18.32	1.16	7.75	15.04	1.76	0.06	0.00	0.00	0.00	3.43	1.79	6.90	56.21
1887	3.36	15.79	2.40	6.54	0.93	0.18	0.00	0.00	0.53	0.00	1.44	7.66	38.83
1888	12.59	2.79	5.47	1.05	0.38	1.56	0.04	0.00	0.41	0.00	4.67	7.99	36.95
1889	0.66	0.68	12.29	2.77	7.07	0.25	0.00	0.00	0.00	10.45	9.70	22.94	66.81
1890	19.90	8.96	14.70	3.86	4.66	0.10	0.00	0.00	3.00	0.00	0.00	7.65	62.83
1891	0.06	10.39	10.00	3.79	2.71	2.22	0.42	0.00	0.17	1.80	1.59	3.74	36.89
1892	5.48	8.44	7.90	7.47	7.58	0.38	T.	0.00	0.57	3.11	13.31	15.76	70.00
1893	8.44	8.20	17.69	6.34	1.51	0.00	T.	T.	2.06	1.60	10.94	7.19	63.97
1894	13.89	16.25	4.74	2.40	5.25	1.61	T.	0.20	1.26	6.22	1.53	20.93	74.28
1895	20.52	7.69	4.67	4.77	4.30	0.00	0.03	0.07	2.64	0.20	2.18	7.27	54.34
1896	19.55	0.77	11.28	16.51	4.81	0.00	0.20	0.10	0.83	1.76	17.18	6.37	79.36
1897	4.83	18.26	13.65	2.40	[4.36]	1.00	0.00	0.04	0.30	4.25	4.09	5.57	58.75
1898	2.13	8.83	1.80	0.92	2.78	1.23	0.00	T.	0.53	2.22	4.34	3.35	28.13
1899	8.59	0.61	21.39	1.60	2.32	1.61	0.00	0.14	0.00	9.87	10.33	11.91	68.37
1900	5.07	4.29	6.65	5.46	1.88	0.13	0.08	0.00	1.00	5.49	[6.20]	4.16	40.41
Mean (28 years)	10.23	8.00	9.42	5.98	2.95	0.92	0.09	0.02	0.70	3.41	6.28	9.39	57.22

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

INDIO, RIVERSIDE COUNTY.

[Elevation, −20 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.10
1879	0.60	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	1.30
1880	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.70
1881	3.45	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.95
1882	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	2.50
1883	0.80	1.13	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.86	2.96
1884	0.00	3.16	0.62	0.44	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.70	5.38
1885	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.00	1.00
1886	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.12
1887	0.00	0.93	0.00	0.30	0.00	0.00	0.00	T.	0.05	0.15	0.00	0.00	1.43
1888	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	1.11	2.96
1889	0.57	0.00	1.05	0.00	0.00	0.00	0.00	0.95	0.00	0.60	0.01	3.29	6.47
1890	0.65	0.06	0.00	0.00	0.00	0.00	0.00	0.10	0.20	0.00	0.00	0.22	1.23
1891	0.00	1.90	0.00	0.00	0.00	0.00	0.00	1.16	0.00	0.00	0.00	0.25	3.31
1892	2.00	0.43	0.22	0.04	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.83
1893	0.03	0.00	1.60	0.00	0.00	0.00	0.05	0.75	0.07	0.00	0.14	T.	2.64
1894	0.00	0.00	0.00	0.00	0.00	0.00	T.	0.00	0.00	0.00	0.00	0.00	T.
1895	6.01	0.00	0.00	0.00	0.00	T.	0.00	0.00	0.00	0.00	0.00	0.00	6.01
1896	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92
1897	1.10	0.19	0.00	0.00	0.00	0.00	0.00	0.00	2.10	0.00	0.00	0.00	3.39
1898	0.10	0.00	0.30	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	1.00	1.70
1899	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.60	0.20	1.30
1900	1.00	0.00	0.30	0.15	T.	0.00	0.00	0.00	0.08	1.04	0.17	0.00	2.74
Mean (23 years)	0.87	0.35	0.20	0.04	0.03	T.	T.	0.14	0.11	0.08	0.19	0.41	2.43

IONE, AMADOR COUNTY.

[Elevation, 287 feet.]

1878	5.28	7.02	3.33	1.10	0.19	0.00	0.00	0.00	0.07	0.23	0.91	0.50	18.63
1879	2.82	3.76	3.88	2.99	1.69	0.15	0.00	0.00	0.00	1.59	2.84	3.05	22.77
1880	1.33	2.39	1.60	7.39	1.60	0.00	0.00	0.00	0.00	T.	0.42	6.68	21.41
1881	3.45	3.07	1.34	1.97	0.00	0.33	0.00	0.00	0.10	0.50	1.41	3.54	15.71
1882	2.87	2.28	5.10	3.00	0.27	0.04	0.00	0.00	0.06	3.04	0.84	0.25	17.75
1883	2.57	0.80	3.57	1.91	3.04	0.00	0.00	0.00	1.14	1.16	1.15	1.70	17.04
1884	2.81	6.13	7.87	6.51	0.39	2.03	0.00	0.00	0.20	1.82	0.00	8.22	35.98
1885	1.74	0.00	0.10	1.55	0.00	0.43	0.00	0.00	0.00	0.00	8.45	2.17	14.44
1886	5.15	0.07	2.40	6.06	0.84	0.00	0.00	0.00	0.00	1.20	0.70	1.64	18.06
1887	0.83	7.26	1.55	1.44	0.10	0.00	0.00	0.00	0.67	0.00	0.25	3.17	15.27
1888	4.60	0.58	1.16	0.70	0.22	0.00	0.00	0.00	0.36	0.00	2.99	2.48	13.09
1889	0.12	0.30	5.33	0.25	2.58	T.	0.00	0.00	0.00	4.71	3.15	6.41	22.85
1890	4.94	3.75	4.87	2.50	2.05	0.00	0.00	0.00	0.72	0.00	0.00	3.49	22.32
1891	0.40	2.30	4.14	2.11	0.20	0.30	0.00	0.00	0.27	0.45	0.52	4.63	15.32
1892	2.00	2.85	4.45	1.40	2.89	0.07	0.00	0.00	0.11	0.18	4.03	6.53	24.51
1893	3.30	1.22	5.70	0.23	0.39	0.00	0.00	0.00	0.29	0.13	3.14	1.80	16.20
1894	4.44	6.03	0.35	0.51	3.39	0.46	0.00	0.00	0.75	2.08	0.96	8.64	27.61
1895	[3.00]	2.49	0.50	3.36	1.88	0.00	0.00	0.00	0.83	0.87	0.42	1.57	14.92
1896	5.49	0.14	4.06	3.76	2.89	0.00	0.00	0.00	0.00	0.60	4.58	1.20	22.72
1897	2.79	7.10	5.74	0.91	0.42	0.26	0.00	T.	0.13	4.76	1.73	0.93	24.77
1898	0.68	3.30	0.12	0.41	1.71	0.00	0.00	0.00	0.51	0.71	1.58	2.66	11.68
1899	3.29	0.22	9.00	0.05	0.23	1.78	0.00	0.00	0.00	5.40	3.85	2.42	26.24
1900	2.26	0.56	3.00	2.81	1.09	0.12	0.00	0.00	0.20	1.22	5.76	1.50	18.52
Mean (23 years)	2.88	2.77	3.44	2.30	1.22	0.26	0.00	T.	0.28	1.33	2.16	3.27	19.90

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

IOWA HILL, PLACER COUNTY.

[Elevation 2,825 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1879	12.50	12.50	18.25	7.87	3.25	0.25	0.00	0.00	0.00	3.50	3.63	13.35	75.10
1880	5.00	6.10	7.88	18.87	6.25	0.00	0.00	0.00	0.00	0.75	0.75	20.80	66.40
1881	20.75	10.50	4.62	3.15	0.13	2.12	0.00	0.00	2.50	4.25	3.90	10.56	62.48
1882	8.92	6.80	10.43	7.59	1.55	0.73	0.00	0.00	0.35	8.50	6.63	2.69	54.19
1883	4.37	4.24	10.63	3.67	7.22	0.00	0.00	0.00	0.75	4.54	2.02	3.75	41.19
1884	8.05	11.26	16.50	13.22	1.60	2.52	0.00	0.00	1.60	2.43	0.00	24.22	81.40
1885	3.03	1.48	0.68	2.93	0.05	1.60	0.00	0.00	1.20	0.00	15.82	6.14	32.93
1886	10.89	0.68	6.46	12.19	1.87	0.00	0.00	T.	0.00	2.28	0.80	5.75	40.92
1887	3.61	15.61	2.23	6.55	0.78	0.00	0.00	0.05	0.48	0.00	0.95	6.52	36.78
1888	11.73	2.41	4.59	1.47	1.14	2.60	0.06	T.	0.35	0.00	3.78	8.14	36.27
1889	0.58	0.71	12.12	4.20	8.26	0.22	0.00	0.00	0.00	9.20	8.49	21.04	64.82
1890	20.87	10.74	14.12	3.02	3.48	0.08	0.00	T.	2.29	0.35	0.00	7.34	62.29
1891	1.96	10.52	8.28	3.55	2.03	2.13	0.83	0.00	0.30	0.98	1.51	11.64	43.73
1892	4.01	5.36	7.11	6.02	6.57	0.41	0.00	0.00	0.51	2.51	8.21	11.88	52.59
1893	6.91	5.80	12.94	6.69	1.44	0.00	T.	0.00	1.81	1.35	8.30	5.87	50.61
1894	11.07	12.25	4.20	2.10	4.03	1.64	T.	0.51	0.78	4.06	1.48	17.57	59.69
1895	18.64	5.57	4.60	3.93	3.92	0.00	0.03	0.27	2.91	0.17	1.61	5.87	47.52
1896	17.77	0.70	10.93	14.01	4.58	0.00	0.11	0.06	1.00	0.49	13.42	5.13	68.20
1897	3.44	15.83	11.33	2.15	0.15	1.32	0.00	0.00	0.45	3.09	3.49	5.31	46.56
1898	2.04	8.10	1.68	0.99	2.83	1.49	T.	0.00	0.44	1.87	4.03	2.84	26.31
1899	6.93	0.88	18.06	1.15	2.41	1.15	0.00	0.32	0.00	9.18	9.08	8.15	57.26
1900	4.43	3.39	6.40	4.59	2.59	0.10	0.05	0.00	0.99	5.67	9.65	3.16	41.02
Mean (22 years)	8.57	6.88	8.82	5.91	3.01	0.83	0.05	0.06	0.83	3.74	4.89	9.42	52.15

IRVINE, ORANGE COUNTY.

1877	2.14	0.23	1.18	0.60	1.02	0.00	0.00	0.00	0.00	0.00	0.17	4.11	9.45
1878	2.51	6.53	2.49	2.55	1.24	0.00	0.00	0.00	0.00	0.21	0.00	1.35	16.88
1879	1.99	0.82	0.54	0.84	0.00	0.00	0.00	0.00	0.00	0.44	3.67	4.68	12.98
1880	0.93	1.66	1.82	3.88	0.00	0.00	0.00	0.00	0.00	0.55	0.25	4.87	13.46
1881	1.85	0.30	1.27	0.40	0.00	0.00	0.00	0.00	0.00	0.59	0.45	0.13	4.99
1882	1.37	1.91	2.23	0.84	0.22	0.00	0.00	0.00	0.00	0.71	0.90	0.17	8.35
1883	0.85	1.12	1.19	0.56	2.06	0.00	0.00	0.00	0.00	0.91	0.00	2.58	9.27
1884	4.46	12.13	9.33	1.56	1.68	0.00	0.00	0.00	0.00	0.33	0.96	4.97	35.42
1885	0.34	0.00	0.55	2.46	0.00	0.00	0.00	0.00	0.00	0.32	3.09	1.08	7.84
1886	6.37	1.13	2.34	2.06	0.00	0.00	0.00	0.00	0.00	0.10	0.60	0.31	12.90
1887	0.40	5.23	0.32	1.63	0.52	0.00	0.00	0.00	0.00	0.00	1.07	1.78	10.95
1888	5.59	1.11	7.78	0.20	0.00	0.00	0.00	0.00	0.00	0.90	2.28	5.31	28.17
1889	0.45	1.25	4.33	0.30	0.60	0.00	0.00	0.12	0.00	1.39	2.32	11.86	22.62
1890	4.33	1.19	1.00	0.00	0.00	0.00	0.00	0.00	0.54	0.00	0.15	2.44	9.65
1891	0.21	9.34	0.70	0.88	0.50	0.00	0.00	0.00	0.00	0.00	0.00	2.95	14.58
1892	0.99	2.46	2.40	0.70	2.63	0.00	0.00	0.00	0.00	0.17	1.33	1.67	12.35
1893	3.84	2.34	8.37	0.38	0.00	0.00	0.00	0.00	0.00	1.46	0.30	2.27	18.96
1894	0.94	0.43	0.61	0.14	0.27	0.00	0.00	0.00	0.24	0.09	0.00	5.32	8.04
1895	7.08	1.07	2.65	0.47	0.08	0.00	0.00	0.00	0.00	0.00	1.73	0.51	13.59
1896	3.44	3.76	0.00	0.03	0.00	0.00	0.00	0.00	0.00	1.04	1.16	1.74	11.17
1897	3.64	3.92	2.85	0.05	0.11	0.00	0.00	0.00	0.20	1.21	0.07	0.03	12.08
1898	2.07	0.14	0.81	0.44	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.06	4.37
1899	3.82	0.55	1.35	0.23	T.	0.63	0.00	T.	0.12	1.14	0.54	0.68	9.06
1900	2.19	T.	0.43	1.09	1.07	0.03	0.00	0.00	0.00	0.20	5.14	0.00	10.15
Mean (24 years)	2.68	2.44	2.34	0.93	0.54	0.03	0.00	T.	0.05	0.49	1.09	2.54	13.01

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

KEELER, INYO COUNTY.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1885	0.00	0.00	0.12	0.82	0.00	0.08	0.00	0.11	0.00	0.25	0.65	0.86	2.39
1886	0.49	0.14	0.60	0.40	0.00	0.00	0.14	0.08	0.00	0.01	0.08	0.00	1.94
1887	T.	0.93	0.00	1.14	0.04	T.	0.52	0.00	1.08	0.84	0.01	0.48	5.04
1888	0.70	1.21	0.30	0.12	0.30	0.20	0.17	0.10	0.06	0.00	1.68	0.82	5.66
1889	0.04	T.	0.52	0.12	0.06	0.01	0.00	T.	0.08	0.56	0.05	0.56	2.00
1890	0.42	0.01	T.	0.10	0.20	0.00	0.00	1.30	0.40	0.03	0.12	0.16	3.74
1891	0.00	0.98	0.16	0.10	0.37	0.30	0.06	0.02	0.19	0.04	0.00	0.31	2.53
1892	0.26	0.19	0.32	0.00	0.56	T.	0.00	T.	T.	0.81	0.11	0.54	2.79
1893	0.71	0.73	0.84	T.	T.	0.00	0.41	T.	T.	T.	0.12	0.78	3.59
1894[a]	T.	0.29	0.01	T.	T.	T.	0.11	0.00	0.00	0.00	0.00	1.05	1.46
1895	0.35	1.15	T.	0.25	T.	T.	T.	T.	T.	0.00	0.00	T.	1.75
1896	0.45	0.00	T.	T.	0.15	T.	0.25	1.42	0.50	T.	0.00	0.25	3.02
1897	0.10	0.27	0.13	0.00	T.	0.00	0.00	0.19	0.14	0.15	T.	T.	0.98
1898	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	T.	0.00	T.	0.30	0.35
1899	0.40	[0.45]	0.00	0.01	T.	0.50	T.	T.	0.00	T.	1.75	T.	3.21
1900	T.	0.00	0.16	1.25	0.23	T.	0.10	T.	0.35	0.09	0.45	0.00	2.63
Mean (16 years)	0.25	0.38	0.20	0.27	0.12	0.07	0.11	0.20	0.18	0.17	0.81	0.35	2.76

[a] Southern Pacific Railway Company.

KENNEDY GOLD MINE, AMADOR COUNTY.

1892	2.25	4.61	6.60	3.63	4.94	0.73	0.00	0.00	0.38	1.76	7.38	6.99	39.27
1893	5.81	4.91	12.04	3.10	1.23	0.00	0.00	0.00	1.05	T.	5.98	4.81	38.93
1894	9.81	11.86	2.23	1.48	5.64	1.89	0.00	0.00	1.30	3.69	1.40	16.44	55.25
1895	13.11	5.39	4.48	5.08	3.18	0.00	0.00	0.00	1.71	0.19	0.90	3.62	37.66
1896	11.80	0.80	4.80	11.20	2.27	0.00	0.25	T.	0.29	1.17	10.71	4.55	47.84
1897	6.00	13.06	7.02	1.51	0.45	1.06	0.00	0.15	0.37	3.68	2.50	3.26	39.06
1898	1.71	6.05	0.88	1.18	2.34	0.30	0.00	0.00	0.42	1.13	2.99	3.19	20.19
1899	4.43	0.53	12.54	1.53	2.33	0.21	0.40	0.04	0.02	0.85	6.11	6.41	42.27
1900	2.90	1.97	4.89	4.44	1.89	0.18	0.00	0.00	0.35	2.70	8.75	2.58	30.60
Mean (9 years)	6.37	5.46	6.16	3.68	2.70	0.48	0.07	0.02	0.65	1.57	5.75	5.76	39.01

KING CITY, MONTEREY COUNTY.

[Elevation, 333 feet.]

1887	0.38	5.08	0.18	0.58	0.02	0.09	0.60	0.00	0.06	0.05	0.31	1.99	8.74
1888	2.85	0.70	2.76	0.10	0.01	0.00	0.00	0.00	0.72	0.00	3.73	2.52	13.37
1889	0.92	1.33	6.13	0.29	0.48	0.00	0.00	0.00	0.00	4.17	2.74	8.07	24.13
1890	4.34	3.01	1.13	0.00	0.13	0.00	0.00	0.00	0.97	0.00	0.12	1.54	11.24
1891	0.40	4.77	0.52	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.02	2.40	8.87
1892	0.66	1.27	2.08	0.26	1.08	0.00	0.00	0.00	0.00	0.42	2.78	4.78	13.33
1893	1.75	1.63	3.17	0.83	0.27	0.00	0.00	0.00	T.	0.00	0.18	1.30	9.13
1894	1.47	0.66	0.30	0.06	0.66	0.18	0.00	0.00	1.13	0.41	0.25	4.15	9.27
1895	3.89	0.35	1.51	0.40	0.13	0.00	0.00	0.00	0.05	1.46	0.51	0.49	8.79
1896	4.53	0.00	1.73	1.84	0.04	0.00	0.00	T.	0.00	0.56	1.92	1.46	12.08
1897	2.07	1.20	2.20	0.11	0.00	0.07	0.00	0.07	0.00	0.73	0.18	0.32	6.95
1898	0.54	1.30	0.54	0.05	0.24	0.00	0.00	0.00	0.00	0.00	0.22	0.27	.....
1899	3.00	0.18	2.04	1.16	0.13	0.07	0.00	0.00	0.00	1.73	1.15	1.21	10.67
1900	1.89	0.06	0.85	0.82	0.86	0.00	0.00	0.00	0.00	1.52	6.33	0.17	12.50
Mean (14 years)	2.05	1.54	1.80	0.52	0.29	0.03	0.00	T.	0.21	0.79	1.46	2.19	10.65

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

KNIGHTS LANDING, SUTTER COUNTY.

[Elevation, 45 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	3.49	5.64	2.30	1.48	0.25	0.00	0.00	0.00	0.16	0.24	0.71	0.10	14.37
1879	2.39	2.86	3.42	2.83	1.07	0.16	0.00	0.05	0.00	0.21	1.77	3.93	18.69
1880	1.25	1.25	0.76	6.64	0.40	0.00	0.00	0.00	0.00	0.00	0.00	6.99	17.29
1881	4.22	2.87	1.11	1.23	0.25	0.89	0.00	0.00	0.42	0.33	2.04	2.17	15.53
1882	1.30	1.75	2.19	1.33	0.16	0.16	0.00	0.00	0.71	1.51	2.58	0.34	12.03
1883	1.48	0.66	3.11	0.87	3.32	0.00	0.00	0.00	0.00	1.50	0.54	0.45	11.93
1884	3.68	3.53	4.88	3.15	0.00	1.89	0.00	0.00	0.35	1.45	0.00	5.56	24.49
1885	1.42	0.00	0.48	1.59	0.00	0.00	0.00	0.00	0.00	0.00	8.00	4.93	16.42
1886	5.53	0.00	1.37	4.25	0.00	0.00	0.00	0.00	0.00	0.23	0.00	1.60	12.98
1887	1.00	6.60	0.75	2.30	0.00	0.00	0.00	0.00	0.00	0.00	0.57	3.26	14.48
1888	4.18	0.91	2.51	0.07	0.43	0.34	0.02	0.00	0.81	0.00	5.72	4.82	19.81
1889	2.84	0.28	6.58	0.42	2.17	0.41	0.00	0.00	0.00	5.28	3.93	8.78	30.64
1890	4.80	4.18	3.87	1.02	1.93	0.00	0.00	0.00	0.40	0.00	0.00	2.87	18.07
1891	0.53	9.40	0.00	2.16	0.00	0.00	0.00	0.00	0.00	0.00	0.35	2.64	15.08
1892	1.75	2.38	2.57	0.91	2.44	0.00	0.00	0.00	0.00	0.59	5.38	5.70	21.72
1893	3.21	2.63	3.60	0.75	0.98	0.00	0.00	0.00	0.15	0.08	1.77	1.72	14.89
1894	3.42	1.64	1.24	0.32	1.91	0.49	0.00	0.00	1.10	1.02	0.70	12.52	24.36
1895	8.73	1.29	1.03	0.57	0.95	0.00	0.00	0.00	2.15	0.00	2.01	3.90	20.63
1896	11.65	0.21	2.25	5.99	0.95	0.00	0.00	0.00	0.64	1.22	4.05	2.34	29.30
1897	2.97	5.05	1.89	0.25	1.50	0.30	0.00	0.00	0.10	2.05	0.80	3.90	18.81
1898	0.49	3.46	2.27	0.34	1.43	0.00	0.00	0.00	0.36	0.88	0.66	1.44	11.33
1899	4.87	0.00	2.47	0.15	0.62	0.88	0.00	T.	0.00	5.00	3.39	3.78	23.16
1900	3.14	0.17	1.88	1.36	0.88	T.	0.00	0.00	T.	1.68	5.20	0.97	15.28
Mean (23 years)	3.41	2.47	2.26	1.74	0.94	0.24	T.	T.	0.32	1.01	2.18	3.66	18.32

KONO TAYEE, LAKE COUNTY.

[Elevation, 1,325 feet.]

1874	1.88	3.60	4.62	2.05	0.45	0.00	0.00	0.00	0.00	3.70	6.25	0.29	22.84
1875	9.16	0.38	0.92	0.00	0.84	0.42	0.00	0.00	0.00	1.17	6.96	5.12	24.97
1876	6.05	4.22	8.34	0.10	0.00	0.00	0.00	0.00	0.00	0.20	3.50	0.00	22.41
1877	3.17	2.81	1.40	0.50	0.00	0.50	0.00	0.00	0.73	1.65	2.23	1.98	14.97
1878	14.16	11.04	4.60	[1.36]	[0.70]	[0.53]	0.00	0.07	0.00	0.41	1.37	0.33	34.57
1879	3.01	3.41	9.15	0.47	0.64	0.00	0.00	0.05	0.00	0.91	3.57	5.72	26.93
1880	6.24	3.85	4.74	0.48	0.25	0.00	0.00	0.00	0.00	0.00	3.54	1.92	21.02
1881	5.50	6.58	0.64	0.95	0.12	0.25	0.00	0.00	0.00	0.63	2.90	1.77	19.34
1882	1.74	3.20	2.34	1.54	0.40	0.00	0.00	0.00	0.42	1.64	4.42	0.98	16.68
1883	1.40	0.60	3.81	0.95	2.41	0.00	0.00	0.00	0.70	0.99	0.39	0.70	11.95
1884	4.17	1.91	5.35	3.88	0.06	4.08	0.00	0.00	0.00	.....	.....	.....	.....
1892	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.84	6.53	5.57	32.39
1893	3.84	4.15	5.41	2.06	0.66	0.00	0.00	0.00	0.25	0.42	3.76	2.34	22.89
1894	6.92	4.32	1.11	0.91	0.90	1.64	0.00	T.	0.50	1.22	0.74	10.70	28.96
1895	14.45	2.32	3.13	0.98	1.14	0.00	0.00	T.	0.71	0.00	1.69	2.12	26.54
1896	9.42	0.25	2.31	4.62	1.69	[0.53]	T.	0.27	0.29	0.73	3.33	5.93	29.37
1897	2.85	4.01	3.76	0.90	0.90	0.48	0.00	0.00	0.00	1.24	1.64	2.12	17.90
1898	0.71	4.19	0.11	0.64	1.67	[0.53]	0.00	0.00	0.51	0.46	1.15	1.27	11.24
1899	7.74	T.	5.43	0.70	0.45	0.28	0.18	T.	0.00	3.78	5.56	4.14	28.26
1900	3.10	1.27	2.89	2.32	0.67	T.	0.00	0.00	T.	3.11	3.89	1.67	18.92
Mean (19 years)	5.55	3.27	3.69	1.84	0.73	0.49	0.01	0.02	0.22	1.22	3.34	2.97	22.74

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

LAGRANGE, STANISLAUS COUNTY.

[Elevation, 298 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1868	3.84	3.63	4.67	1.57	1.32	0.00	0.00	0.00	0.00	0.30	0.20	3.25	18.78
1869	4.00	5.13	3.07	1.06	1.15	0.00	0.00	0.00	0.00	1.56	0.69	0.69	17.35
1870	1.87	4.32	1.43	1.85	0.43	0.00	0.00	0.00	0.00	0.50	0.25	2.10	12.75
1871	2.19	2.13	0.31	2.55	0.43	0.00	0.00	0.00	0.00	0.00	2.25	6.94	16.80
1872	2.69	5.32	2.18	0.80	0.30	0.00	0.00	0.00	0.00	0.00	0.12	7.69	19.10
1873	1.12	4.67	0.30	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.14	4.19	10.87
1874	3.92	2.32	2.91	1.15	0.00	0.00	0.00	0.00	0.15	3.52	3.54	0.11	17.62
1875	2.30	0.00	0.41	0.26	0.00	0.00	0.00	0.00	0.00	0.40	10.58	1.98	15.93
1876	5.63	2.25	3.88	0.67	0.48	0.00	0.00	0.00	0.00	0.55	0.48	0.00	13.94
1877	2.59	0.45	0.61	0.00	1.06	0.00	0.00	0.00	0.00	0.68	1.18	1.12	7.69
1878	5.58	5.54	3.09	1.67	0.04	0.00	0.00	0.00	0.05	0.90	0.50	0.20	17.57
1879	1.91	2.39	2.16	2.30	0.98	0.15	0.00	0.00	2.35	1.61	2.48	0.60	16.93
1880	2.68	1.70	6.04	2.04	0.00	0.00	0.00	0.00	0.16	0.92	4.21	4.58	22.33
1881	3.52	1.09	0.60	0.04	0.00	0.00	0.00	0.00	0.75	0.60	1.13	1.96	9.69
1882	1.10	1.67	4.72	2.25	0.33	0.00	0.00	0.00	0.51	1.54	1.33	0.51	13.96
1883	2.93	1.35	3.58	1.33	2.90	0.00	0.00	0.00	0.55	1.20	0.84	0.70	15.38
1884	2.85	6.07	6.06	4.90	0.79	1.05	0.00	0.00	0.95	1.85	0.02	6.77	31.31
1885	0.88	0.03	0.17	1.19	0.00	0.03	0.00	0.00	0.00	0.00	10.60	1.48	14.38
1886	3.79	0.32	3.24	4.56	0.10	0.00	0.00	0.00	0.00	0.22	1.20	0.75	14.18
1887	0.51	5.11	0.40	2.82	0.00	0.00	0.00	T.	0.37	T.	0.20	4.02	13.43
1888	2.84	0.66	2.63	0.17	0.52	T.	0.02	T.	0.32	0.00	3.20	3.67	14.12
1889	0.17	0.61	4.24	0.58	1.64	T.	0.00	T.	0.17	4.00	4.59	7.64	23.64
1890	5.17	3.77	2.13	1.45	1.42	0.00	T.	T.	0.95	T.	0.18	2.83	17.90
1892	0.50	5.25	1.19	1.48	3.04	0.00	0.00	0.00	0.06	0.70	5.46	2.88	20.56
1893	1.93	2.42	5.12	0.75	0.05	0.00	0.00	T.	0.57	0.12	1.70	2.82	15.48
1894	6.17	6.43	0.61	0.30	3.39	0.66	T.	T.	0.67	0.85	0.60	7.60	27.28
1895	5.17	2.60	2.50	1.40	0.97	0.00	0.00	0.00	0.20	0.54	0.72	1.55	15.65
1896	4.72	0.20	2.65	3.25	0.45	T.	0.10	0.33	T.	1.50	3.73	1.94	18.87
1897	2.20	6.07	3.84	T.	T.	0.52	0.00	0.00	T.	1.97	0.68	1.38	16.66
1898	0.99	1.92	1.87	0.35	1.41	0.00	0.00	0.00	0.70	0.55	0.86	1.40	10.05
1899	2.51	0.35	5.04	0.35	0.90	0.15	0.00	0.02	0.00	2.60	4.25	1.79	17.96
Mean (31 years)	2.85	2.77	2.64	1.41	0.78	0.08	T.	0.01	0.31	0.94	2.19	2.75	16.71

LA PORTE, PLUMAS COUNTY.

[Elevation, 5,000 feet.]

1894	[15.75]	[10.11]	[9.36]	3.05	2.00	3.49	T.	0.17	1.13	8.87	1.32	15.47	70.72
1895	22.01	6.65	6.12	4.00	8.55	0.00	1.41	0.29	8.42	0.69	3.35	9.98	71.47
1896	32.43	2.84	16.20	16.63	9.32	0.09	0.31	0.25	2.29	3.09	23.87	12.88	120.20
1897	6.04	17.92	13.51	3.12	0.71	3.94	0.00	T.	1.26	4.84	9.34	6.63	67.31
1898	2.53	13.04	1.62	1.49	4.64	2.73	T.	0.04	0.94	3.31	6.67	3.36	40.37
1899	12.95	2.69	25.26	2.92	4.43	1.48	0.00	0.82	0.00	18.30	15.96	16.23	101.04
1900	11.95	5.66	12.24	6.51	2.57	0.36	0.06	T.	0.61	13.02	13.70	8.79	75.47
Mean (7 years)	14.81	8.42	12.04	5.39	4.60	1.73	0.25	0.22	2.10	7.45	10.60	10.48	78.08

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

LODI, SAN JOAQUIN COUNTY.

[Elevation, 35 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1888	5.09	0.44	2.59	0.11	0.61	0.43	0.00	0.00	0.88	0.00	3.61	3.56	17.32
1889	0.35	0.65	5.07	0.20	2.57	0.11	0.00	0.00	0.00	5.62	4.71	7.70	26.98
1890	6.67	2.90	2.71	1.94	1.20	0.00	0.00	0.00	0.99	0.00	0.00	3.65	20.06
1891	0.44	5.08	3.52	2.45	0.34	0.14	0.00	0.00	0.16	0.18	0.49	4.69	17.44
1892	1.04	1.81	4.04	1.78	2.47	0.25	0.00	0.00	0.25	1.88	5.47	5.42	24.36
1893	3.42	2.66	3.88	2.04	0.92	0.00	0.00	0.00	0.15	T.	3.11	1.91	18.09
1894	3.99	6.75	0.57	0.44	3.33	1.19	T.	T.	1.78	2.14	0.73	9.27	30.19
1895	7.46	2.35	1.45	1.24	0.63	0.00	0.00	T.	0.88	0.13	1.24	1.50	16.88
1896	9.02	0.21	2.32	2.90	0.82	0.00	T.	0.17	0.04	1.19	3.86	1.87	22.40
1897	3.41	4.29	3.88	0.40	0.10	0.04	0.04	T.	0.16	1.29	0.66	1.57	15.84
1898	1.05	1.71	0.98	0.40	1.38	0.06	0.00	0.00	0.60	0.45	0.66	1.93	9.22
1899	3.42	0.16	6.81	0.30	0.55	0.31	0.00	0.39	0.00	3.74	3.01	2.18	20.87
1900	2.92	0.37	1.45	2.26	2.72	T.	T.	0.00	0.12	1.83	4.87	1.06	17.60
Mean (13 years)	3.71	2.26	3.02	1.27	1.36	0.20	T.	0.04	0.46	1.42	2.49	3.56	19.80

LOS BANOS, MERCED COUNTY.

[Elevation, 121 feet.]

1873	1.79	1.18	1.82	0.84	0.37	0.14	0.02	T.	0.04	0.23	1.46	0.74	8.13
1874	1.61	1.08	1.20	0.77	0.28	0.13	0.00	0.00	0.00	0.29	0.99	1.37	7.72
1875	3.72	0.00	0.33	0.57	T.	0.09	0.25	0.00	0.00	0.00	5.06	0.42	10.44
1876	1.50	1.54	1.60	0.11	0.00	0.00	0.00	0.00	0.00	0.03	0.16	0.00	4.94
1877	0.96	0.25	0.16	T.	0.04	0.00	0.00	0.00	0.00	0.00	0.79	0.65	2.85
1878	2.56	3.14	1.19	0.59	0.00	0.00	0.00	0.00	0.00	0.27	0.19	0.29	8.23
1879	0.50	0.89	0.42	0.68	0.17	0.08	0.00	0.00	0.00	0.14	0.67	0.79	4.34
1880	0.23	0.83	0.29	1.65	0.31	0.00	0.00	0.00	0.00	0.00	0.58	3.42	7.31
1881	0.99	1.16	0.86	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.20	4.50
1882	0.71	0.49	2.26	0.35	0.00	0.00	0.00	0.00	0.44	0.70	0.57	0.07	5.59
1883	1.62	0.43	1.81	0.07	1.81	0.00	0.00	0.00	0.00	0.42	0.06	0.38	6.60
1884	1.42	3.09	2.95	1.80	1.03	1.37	0.00	0.00	0.00	1.01	0.05	3.96	16.74
1885	0.85	0.05	0.65	0.75	0.00	0.00	0.00	T.	0.00	0.00	6.24	0.69	9.23
1886	3.32	0.05	1.32	1.46	0.00	0.00	0.00	0.00	0.00	0.42	0.18	0.21	6.96
1887	0.06	1.50	0.44	0.43	0.00	T.	0.00	0.00	T.	0.00	0.05	0.74	3.22
1888	1.83	0.06	1.33	0.00	0.19	T.	T.	T.	0.60	0.00	2.99	1.92	8.92
1889	0.27	0.76	1.77	0.22	0.64	T.	0.00	0.00	0.14	0.86	2.43	5.54	12.63
1890	3.11	1.03	0.75	0.02	0.33	0.00	0.00	0.02	1.24	0.00	0.16	1.32	7.98
1891	0.07	2.17	0.39	1.64	0.00	0.00	0.00	0.00	0.20	0.12	0.12	3.05	7.76
1892	0.10	1.07	1.75	0.85	0.90	0.00	0.00	0.00	0.00	0.21	0.71	2.68	8.27
1893	0.75	2.20	2.19	0.19	0.11	0.00	0.00	0.00	0.05	0.05	0.30	0.97	6.81
1894	1.80	1.50	0.00	0.00	1.06	0.56	0.00	0.00	0.75	0.46	0.13	4.08	10.34
1895	3.17	0.95	1.22	0.38	0.35	0.00	0.00	0.00	0.00	0.20	0.45	1.00	7.72
1896	4.34	0.00	0.57	0.55	0.40	0.00	0.15	0.00	0.00	0.91	1.06	0.53	8.51
1897	1.08	1.78	1.20	0.00	0.00	0.00	0.00	0.08	0.00	0.80	T.	0.00	4.94
1898	1.53	0.54	0.72	0.00	0.66	0.00	0.00	0.00	0.10	0.32	0.05	0.65	4.57
1899	1.62	0.00	2.00	1.15	0.00	0.00	0.00	0.00	0.00	2.11	0.95	0.88	8.71
1900	1.18	0.00	0.38	1.10	2.20	0.00	0.00	0.00	0.00	0.35	3.75	0.55	9.51
Mean (28 years)	1.52	0.99	1.11	0.61	0.39	0.08	0.02	T.	0.13	0.28	1.09	1.32	7.62

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

MANZANA, LOS ANGELES COUNTY.

[Elevation, 2,870 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1894	0.21	0.37	0.36	T.	0.35	0.17	0.00	0.10	0.49	0.00	0.00	3.60	5.65
1895	2.79	0.00	1.36	0.08	T.	0.00	0.00	0.00	0.00	0.40	0.48	0.18	5.29
1896	1.09	0.00	1.70	0.63	T.	0.00	T.	1.04	0.00	0.61	0.30	1.46	6.83
1897	2.70	3.04	1.71	0.04	0.01	T.	T.	0.28	0.00	0.21	T.	0.14	8.13
1898	1.70	0.02	0.47	0.00	0.25	0.00	0.00	0.00	T.	0.00	T.	0.50	2.94
1899	1.15	T.	1.35	0.04	0.09	0.04	0.00	0.00	0.00	1.27	0.71	0.29	4.94
1900	1.11	0.10	0.93	0.42	0.38	0.00	0.00	0.08	0.10	0.09	2.55	0.00	5.76
Mean (7 years)	1.54	0.50	1.13	0.17	0.15	0.03	T.	0.21	0.08	0.37	0.58	0.88	5.65

MARYSVILLE, YUBA COUNTY.

[Elevation, 67 feet.]

1871	[3.22]	1.21	0.29	0.53	1.00	0.00	0.00	0.00	0.00	0.09	0.72	8.08	15.14
1872	5.50	3.88	2.27	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.08	4.90	17.66
1873	1.75	4.30	1.04	0.71	0.32	0.00	T.	0.00	0.00	0.58	2.39	12.37	23.46
1874	5.55	1.63	3.79	1.13	0.30	0.00	0.00	0.00	0.00	1.72	4.14	0.34	18.60
1875	4.21	0.04	1.20	0.00	0.06	1.97	0.00	0.00	0.00	0.02	3.56	2.41	13.47
1876	2.79	3.32	4.06	1.05	0.15	0.00	0.11	0.06	0.00	4.15	0.40	0.00	16.09
1877	3.60	1.57	0.92	0.12	0.81	0.42	0.00	0.00	0.00	0.50	1.68	1.55	11.17
1878	9.47	5.32	3.53	1.30	0.39	0.00	0.00	0.00	0.62	0.64	0.60	0.49	22.36
1879	1.76	2.93	3.08	3.76	1.79	0.09	0.00	0.03	0.00	1.04	2.83	3.60	20.91
1880	1.27	1.28	0.66	7.23	0.99	0.00	0.00	0.00	0.00	0.00	0.05	6.90	18.38
1881	4.33	3.90	0.83	1.07	T.	0.35	0.00	0.00	0.60	1.82	0.93	2.68	16.51
1882	1.84	2.51	1.93	1.09	0.00	0.98	0.00	0.00	1.00	2.40	1.57	0.77	15.09
1883	1.55	0.40	2.76	0.30	3.50	0.00	0.00	0.00	1.15	0.75	0.61	0.40	11.42
1884	2.49	2.82	3.31	2.57	0.00	1.18	0.00	0.00	0.09	1.74	0.00	4.24	18.44
1885	1.32	0.07	0.12	0.42	0.00	0.15	0.00	T.	0.00	0.15	8.23	3.95	14.41
1886	3.96	0.34	1.45	3.96	0.23	0.00	0.00	0.00	0.00	0.63	T.	2.30	12.87
1887	0.73	6.09	1.02	1.90	0.10	0.09	0.00	0.00	0.00	0.00	1.07	3.70	14.70
1888	4.58	1.65	2.55	0.00	0.41	0.32	0.00	0.00	0.00	0.00	4.23	6.27	20.01
1889	1.05	0.35	7.53	1.00	2.35	0.50	0.00	0.00	0.00	5.87	3.73	9.01	31.39
1890	4.44	4.65	6.71	1.85	2.55	0.10	0.00	0.00	0.73	0.00	0.00	2.62	23.65
1891	0.54	8.68	0.86	1.52	0.67	0.10	0.00	0.00	0.00	0.00	0.70	3.77	16.84
1892	2.32	3.77	3.63	1.86	2.94	0.00	0.00	0.00	0.20	1.20	6.90	3.66	26.48
1893	1.80	3.39	3.68	1.00	1.10	0.00	0.00	0.00	0.00	0.34	2.23	1.92	15.46
1894	0.34	1.74	0.73	0.47	1.86	0.64	0.00	0.00	0.62	1.91	0.80	9.13	18.24
1895	7.56	[2.85]	[2.26]	1.08	0.37	0.00	0.00	0.00	2.33	0.04	0.83	1.02	18.34
1896	8.32	0.17	1.24	4.96	0.70	0.00	0.00	T.	0.77	0.61	2.66	2.07	21.50
1897	2.22	5.80	1.75	1.53	0.36	T.	0.00	0.00	0.00	1.60	0.85	1.60	15.71
1898	1.45	5.06	0.00	0.44	1.74	0.00	0.00	0.00	0.35	0.90	1.26	1.61	12.81
1899	4.22	0.00	6.30	0.55	0.09	1.25	0.00	0.26	0.00	4.20	6.26	3.14	26.27
1900	8.59	0.48	1.63	2.45	1.02	0.04	0.00	0.00	0.00	2.13	4.97	1.85	23.16
Mean (30 years)	3.43	2.67	2.37	1.56	0.86	0.27	T.	0.01	0.28	1.17	2.18	3.54	18.35

MENDOTA, FRESNO COUNTY.

[Elevation, 177 feet.]

1894	[1.39]	0.86	0.00	0.10	0.47	0.49	0.00	0.00	0.88	0.09	0.00	3.65	7.93
1895	1.20	0.51	1.07	0.46	0.60	0.00	0.00	0.00	0.16	1.04	0.40	0.00	5.44
1896	2.56	0.00	0.44	0.51	0.20	0.00	0.13	0.00	0.07	0.49	1.21	0.50	6.11
1897	1.21	0.67	0.86	0.07	0.00	T.	0.00	0.00	0.00	0.68	0.22	0.08	3.79
1898	0.59	1.49	0.54	0.00	0.55	0.00	0.00	0.00	0.11	0.12	0.00	1.65	5.05
1899	0.76	0.00	1.10	0.10	0.35	0.00	0.00	0.00	0.00	1.57	1.36	0.36	5.60
1900	0.70	0.00	0.64	0.66	0.59	0.00	0.00	0.00	0.00	0.52	3.89	0.44	7.44
Mean (7 years)	1.20	0.50	0.66	0.27	0.39	0.07	0.02	0.00	0.17	0.64	1.01	0.95	5.91

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

MERCED, MERCED COUNTY.

[Elevation, 173 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1872	2.16	1.62	0.36	0.89	0.00	0.00	0.00	0.00	0.00	0.00	T.	5.30	10.33
1873	5.69	1.22	T.	0.00	0.00	0.00	T.	0.00	0.00	0.00	1.42	1.67	10.00
1874	2.20	0.00	0.00	0.00	1.65	0.00	0.00	0.00	0.47	1.84	1.60	0.00	7.76
1875	3.95	0.15	0.97	0.00	0.00	1.02	0.00	0.00	0.00	0.00	5.83	0.73	12.65
1876	2.90	1.38	1.54	0.17	0.13	0.00	0.17	0.00	0.00	0.72	0.09	0.00	7.10
1877	1.14	0.03	0.53	T.	0.52	0.00	0.00	0.00	0.00	0.06	1.17	0.85	4.30
1878	3.35	2.78	1.89	1.71	T.	0.00	0.00	0.00	0.00	0.25	0.42	0.03	10.43
1879	0.96	1.32	1.19	1.35	0.21	0.10	0.00	0.00	0.00	0.60	1.63	1.06	8.44
1880	0.69	2.06	0.64	4.71	0.48	0.00	0.00	0.00	0.00	0.00	0.63	4.60	13.81
1881	3.40	1.69	0.85	0.34	0.00	0.08	0.00	0.00	0.14	0.35	0.47	0.70	8.02
1882	0.92	1.37	3.19	1.12	0.32	0.00	0.00	0.00	0.53	0.98	0.53	0.07	9.03
1883	1.55	0.50	3.11	0.41	2.13	0.00	0.00	0.00	0.10	1.01	0.38	0.99	10.18
1884	1.64	4.39	5.38	5.60	0.86	1.73	0.00	0.00	0.00	0.54	0.02	3.63	23.79
1885	0.85	0.00	0.65	1.49	0.00	0.00	0.00	0.00	0.00	0.00	5.82	1.08	9.89
1886	2.64	0.10	0.94	2.85	0.00	0.00	0.00	0.00	0.00	0.47	0.25	0.58	7.83
1887	0.13	2.83	0.20	1.74	0.00	0.00	0.00	0.00	0.45	0.00	0.10	1.00	6.45
1888	2.67	0.15	1.68	0.28	0.65	0.10	0.00	0.00	0.50	0.00	2.40	2.12	10.55
1889	0.45	0.15	1.21	0.20	0.77	0.00	0.00	0.00	0.00	1.61	2.80	5.59	12.78
1890	4.40	1.50	1.01	0.39	0.51	0.00	0.00	0.00	1.73	0.00	0.00	[2.00]	11.54
1891	0.33	2.23	1.29	1.05	0.06	0.24	0.00	0.00	0.00	0.20	0.18	2.99	8.56
1892	0.31	0.79	1.85	0.85	2.47	0.00	0.00	0.00	0.10	0.27	0.64	2.75	10.03
1893	1.05	2.31	3.49	0.37	0.00	0.00	0.00	0.00	0.07	0.00	0.65	1.13	9.07
1894	2.68	3.28	0.21	0.28	2.02	0.54	0.00	0.00	0.72	0.88	0.15	4.74	15.50
1895	2.12	1.71	1.17	0.50	0.64	0.00	0.00	0.00	0.00	0.50	0.69	1.03	8.36
1896	5.50	0.00	2.10	1.72	0.29	0.00	0.19	0.53	0.00	0.91	1.94	1.04	14.22
1897	2.49	3.20	1.29	0.41	0.00	0.08	0.00	0.00	0.00	0.41	0.17	0.75	8.80
1898	0.86	1.18	1.34	0.07	0.98	0.00	0.00	0.00	0.53	0.11	0.20	0.42	5.69
1899	2.18	0.00	2.64	0.30	0.70	0.60	0.00	0.14	0.00	2.16	1.74	1.80	12.26
1900	1.63	0.05	1.07	1.83	0.97	T.	T.	0.00	T.	0.81	4.16	0.57	11.09
Mean (29 years)	2.10	1.31	1.44	1.06	0.56	0.15	0.01	0.02	0.18	0.51	1.21	1.70	10.26

MODESTO, STANISLAUS COUNTY.

[Elevation, 90 feet.]

1871	0.49	0.75	0.11	0.78	0.09	0.04	0.00	0.00	0.00	T.	0.87	4.76	7.89
1872	3.16	2.20	0.94	0.78	0.00	0.00	0.00	T.	0.00	0.00	0.40	3.10	10.58
1873	1.05	2.66	0.05	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.05	3.75	7.95
1874	4.00	0.56	1.00	0.57	1.00	0.43	0.00	0.00	0.75	1.32	1.88	0.00	11.51
1875	2.46	0.00	0.88	0.08	0.00	0.03	0.00	0.00	0.00	0.00	5.98	1.42	10.85
1876	2.36	1.55	1.71	0.35	T.	0.00	0.15	0.00	0.00	1.38	0.20	0.00	7.70
1877	1.10	0.08	0.80	0.31	0.43	0.00	0.00	0.00	0.00	0.27	0.84	1.39	5.22
1878	3.70	2.76	1.80	0.75	T.	0.00	0.00	0.00	0.00	0.42	0.33	0.57	10.33
1879	1.62	1.26	2.11	1.31	0.71	0.15	0.00	0.00	0.00	1.07	3.01	1.74	12.98
1880	0.43	1.31	0.70	4.11	0.51	0.00	0.00	0.00	0.00	0.00	0.60	3.55	11.21
1881	1.39	1.63	0.70	0.53	0.00	0.00	0.00	0.00	0.00	0.25	0.65	0.80	5.95
1882	0.99	0.62	1.85	0.79	0.50	0.19	0.00	0.00	0.58	0.64	2.07	0.12	8.35
1883	2.14	0.20	1.31	0.73	2.24	0.00	0.00	0.00	0.25	1.39	0.16	0.44	8.86
1884	0.75	2.01	3.89	2.84	0.15	0.99	0.00	0.00	0.00	1.20	0.00	2.62	14.45
1885	0.90	0.00	0.70	0.98	0.00	0.00	0.00	0.00	0.00	0.00	5.05	0.85	8.48
1886	2.54	0.10	1.46	2.79	0.00	0.00	0.00	0.00	0.00	0.25	1.01	0.65	8.80
1887	0.09	2.16	0.34	1.22	0.00	0.00	0.00	0.00	0.05	0.00	0.10	1.76	5.72
1888	1.72	0.53	1.36	0.27	0.69	0.10	0.00	0.00	0.51	0.00	1.86	1.40	8.44
1889	0.45	0.20	1.80	0.19	1.20	0.00	0.00	0.00	0.00	1.79	2.22	5.31	13.16
1890	3.95	1.03	0.88	0.63	0.59	0.00	0.00	0.00	1.27	0.02	0.00	2.14	10.51
1891	0.16	1.91	0.74	1.01	0.24	0.00	0.00	0.00	0.23	0.12	0.10	3.26	7.77
1892	0.70	1.91	2.43	0.46	1.14	0.00	0.00	0.00	0.00	0.68	2.69	2.44	12.45
1893	1.65	2.02	4.24	0.45	0.00	0.00	0.00	0.00	0.00	0.00	1.06	1.85	11.27
1894	3.36	3.18	0.00	0.23	1.72	0.00	0.00	0.00	1.20	0.61	0.28	5.42	16.00
1895	4.05	1.39	1.83	1.17	0.45	0.00	0.00	0.00	0.13	T.	0.70	1.28	11.00
1896	4.56	0.00	0.90	2.22	0.51	0.00	0.30	T.	0.25	1.06	2.97	1.31	14.10
1897	1.19	2.90	1.83	0.00	0.10	T.	0.00	0.00	0.00	1.10	0.11	0.54	7.77
1898	0.49	0.71	0.35	0.00	0.57	0.00	0.00	0.00	0.31	0.50	0.38	0.88	4.19
1899	2.51	0.21	3.46	0.02	0.11	0.97	0.00	0.00	0.00	1.96	3.04	1.38	13.66
1900	1.30	0.29	0.98	1.70	1.26	0.00	0.00	0.00	0.13	0.72	4.24	0.92	11.54
Mean (30 years)	1.84	1.20	1.37	0.92	0.47	0.10	0.02	T.	0.20	0.56	1.43	1.86	9.96

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

MOKELUMNE HILL, CALAVERAS COUNTY.

[Elevation, 1,550 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1882	3.80	3.25	5.75	2.50	0.00	0.00	0.00	0.00	0.50	3.50	2.75	0.30	21.85
1883	2.70	0.75	4.75	2.05	3.85	0.00	0.00	0.00	0.77	1.53	1.16	1.58	19.14
1884	3.89	8.12	9.81	8.42	0.79	2.92	0.00	0.00	0.40	1.98	0.00	16.78	53.11
1885	1.62	0.25	0.51	1.89	0.09	0.52	0.00	0.00	0.17	0.00	15.17	3.78	24.00
1886	8.75	1.14	4.79	7.32	0.72	0.00	0.00	0.00	0.00	1.45	1.22	1.86	27.25
1887	1.49	9.01	0.84	4.81	0.18	0.00	0.00	0.00	0.76	0.00	0.76	4.29	22.14
1888	6.87	0.77	4.63	0.20	1.11	0.22	0.00	0.00	0.46	0.00	2.78	2.86	19.90
1889	0.51	1.41	6.83	1.15	4.04	0.10	T.	0.00	0.00	5.41	5.36	15.26	40.07
1890	9.22	5.57	8.37	2.51	2.89	0.00	0.00	0.00	1.78	0.00	0.00	4.68	35.02
1891	0.93	6.89	5.85	4.14	1.10	1.15	0.00	0.00	0.21	0.20	1.35	9.49	31.31
1892	1.88	3.69	5.60	2.38	3.75	0.40	0.00	0.00	0.62	1.04	8.03	6.04	33.43
1893	4.31	4.50	11.83	2.31	0.77	0.00	T.	0.00	1.63	0.40	5.04	3.35	34.16
1894	9.32	9.38	1.73	1.36	3.41	1.62	0.00	T.	1.18	4.34	1.12	14.31	47.77
1895	10.06	4.40	3.73	4.03	2.56	0.00	0.00	T.	0.83	0.12	1.12	2.88	29.73
1896	9.41	0.66	4.66	10.06	1.09	0.00	T.	0.22	0.10	1.42	8.98	3.84	40.34
1897	5.92	9.76	9.00	0.48	0.27	1.02	0.00	0.15	0.13	2.97	2.61	2.30	34.61
1898	1.62	4.45	1.18	0.47	2.13	0.22	T.	0.00	9.44	0.98	1.93	2.50	15.92
1899	4.52	0.70	13.27	1.11	1.58	0.20	0.00	T.	T.	5.45	5.79	6.09	38.71
1900	2.44	1.54	3.34	3.32	1.85	0.05	T.	T.	0.19	2.25	7.60	1.76	24.34
Mean (19 years)	4.67	4.33	5.60	2.74	1.69	0.44	T.	0.02	0.53	1.74	3.82	5.47	31.20

MOJAVE, KERN COUNTY.

[Elevation, 2,751 feet.]

1877	0.85	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	3.24
1878	1.22	1.74	0.30	0.76	0.00	0.02	0.00	0.10	0.29	0.00	0.32	1.07	5.82
1879	0.62	0.05	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.42	4.16	5.47
1880	0.40	0.50	0.71	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.03	3.24
1881	0.00	0.00	0.06	0.18	0.00	0.00	0.00	0.00	0.00	T.	T.	T.	0.24
1882	0.05	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63
1883	0.00	0.00	0.00	0.00	T.	0.00	0.00	0.00	0.00	0.10	0.00	0.25	0.35
1884	1.77	5.69	2.17	0.61	0.00	1.05	0.00	0.00	0.00	0.13	[0.31]	[1.59]	13.32
1885	0.00	0.06	0.00	0.61	0.14	0.00	0.71	0.00	0.00	0.00	1.25	1.16	3.98
1886	1.49	T.	1.22	0.14	0.00	T.	T.	0.00	0.00	T.	0.76	0.08	3.69
1887	T.	4.09	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.95	0.56	1.06	6.80
1888	2.62	1.56	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.18	2.23	10.34
1889	0.35	0.03	3.43	0.00	T.	0.00	0.00	0.81	0.27	2.21	0.45	7.30	14.85
1890	0.85	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.00	0.15	0.67	2.95
1891	0.00	2.33	0.19	0.36	0.00	0.00	T.	0.00	0.33	0.03	0.00	0.76	4.00
1892	1.00	0.47	1.61	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.27	0.56	4.17
1893	2.73	0.26	1.53	0.13	0.00	0.00	1.04	0.00	0.00	0.29	0.15	0.88	7.01
1894	0.48	0.54	0.24	T.	0.03	0.00	0.00	0.00	0.00	0.00	T.	3.68	4.97
1895	2.66	0.53	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.14	0.00	5.14
1896	1.31	0.00	1.45	0.00	0.00	0.22	0.12	0.00	0.00	0.70	0.17	0.82	4.79
1897	1.86	1.17	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85
1898	0.60	T.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.89
1899	0.37	0.00	0.48	0.00	T.	0.00	0.00	0.00	0.00	0.68	0.88	0.31	2.72
1900	0.31	0.00	T.	0.21	0.42	0.00	0.00	0.00	0.01	0.00	1.66	0.00	2.61
Mean (24 years)	0.90	0.84	0.71	0.16	0.04	0.05	0.08	0.04	0.07	0.25	0.30	1.26	4.79

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

MONTEREY, MONTEREY COUNTY.

[Elevation, 15 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1847[a]	.....	.....	.....	.....	0.03	0.00	0.00	0.00	0.00	1.10	3.10	0.00	.....
1848	1.70	2.20	2.40	0.65	2.50	2.50	0.50	0.00	.....	.....	.....	.....	.....
1849	.....	.....	.....	.....	0.03	0.00	0.00	0.00	0.00	0.01	0.61	3.45	.....
1850	2.95	2.20	1.30	0.33	0.00	0.00	0.00	0.00	0.02	0.00	0.61	2.98	10.49
1851	.....	.....	.....	.....	.....	.....	0.01	0.00	0.01	0.20	0.91	4.50	.....
1852	0.40	0.30	6.12	0.92	0.10	0.16	0.00	0.00	.....	.....	.....	.....	.....
1859	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.08	2.86	.....
1860	0.98	0.54	7.02	2.60	2.05	0.17	0.40	.....	.....	0.70	0.11	.....	.....
1861	.....	.....	.....	.....	0.10	.....	.....	.....	.....	.....	.....	.....	.....
1868	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.01	0.69	.....
1864	4.28	0.04	1.60	1.23	1.35	0.06	0.00	0.10	0.00	0.30	4.13	3.99	17.08
1865	1.94	1.66	0.31	0.36	0.31	0.00	0.10	0.00	0.17	0.17	1.78	1.36	8.16
1866	6.07	1.16	3.13	0.99	0.86	0.14	0.00	0.02	0.00	0.00	2.33	6.86	21.56
1867	3.61	4.23	3.31	.....	.....	.....	.....	.....	0.09	.....	2.76	6.71	.....
1868	7.65	1.66	4.78	1.04	0.11	0.25	0.06	.....	.....	.....	1.42	4.30	.....
1869	3.83	4.13	2.69	0.94	.....	0.03	0.01	.....	.....	1.86	0.72	2.42	.....
1870	1.13	3.80	1.91	1.44	0.81	0.00	.....	.....	.....	0.46	1.19	2.37	.....
1871	1.44	2.64	0.31	.....	0.50	0.03	.....	.....	.....	.....	.....	11.42	.....
1872	0.33	3.45	1.08	0.66	0.31	0.65	.....	0.16	0.05	.....	.....	.....	.....
1877	.....	.....	.....	.....	.....	.....	.....	0.00	0.00	0.00	0.46	4.50	.....
1878	9.47	11.68	3.42	2.49	0.00	0.00	0.00	0.00	0.00	0.54	0.18	0.77	28.55
1879	3.54	2.36	2.32	1.77	0.41	0.00	0.00	0.00	0.00	0.54	1.00	3.49	15.43
1880	[3.03]	[2.55]	1.05	5.31	0.77	0.00	0.00	0.00	0.00	0.00	0.40	5.47	18.58
1881	2.70	2.07	1.55	1.37	0.00	0.20	0.00	0.00	0.00	0.60	1.20	2.13	11.82
1882	1.50	2.52	5.64	1.57	0.00	0.00	0.00	0.00	0.22	1.67	1.20	0.39	14.71
1883	2.60	2.22	5.68	1.42	0.99	0.10	0.00	0.00	0.19	0.71	0.39	1.16	15.46
1884	2.60	4.34	6.08	3.75	0.36	1.80	0.00	0.07	0.08	1.81	0.30	5.33	26.47
1885	1.22	0.09	0.40	1.70	0.20	0.03	0.00	0.00	0.00	0.00	6.55	1.73	11.92
1886	3.09	1.14	2.52	3.39	0.08	0.00	0.00	0.00	0.00	0.70	0.78	0.60	12.30
1887	0.35	4.92	0.60	1.16	0.00	0.05	0.00	0.00	0.25	0.00	1.35	1.81	10.49
1888	3.95	1.09	3.29	0.23	0.81	0.00	0.00	0.00	0.65	0.00	1.76	2.76	14.54
1889	0.81	0.94	3.58	1.15	1.22	0.00	0.00	0.00	0.00	4.28	1.62	11.54	25.14
1890[b]	7.67	2.67	0.83	0.34	0.37	0.00	0.00	0.00	0.10	0.00	1.32	2.66	15.96
1891[c]	1.06	3.68	0.95	2.36	0.09	0.08	0.00	0.00	0.11	0.02	0.19	4.72	13.26
1892	0.66	1.50	3.05	0.82	0.83	0.00	0.00	0.00	1.25	0.00	5.86	3.04	17.01
1893	1.73	3.34	5.78	1.41	0.46	0.00	0.00	0.00	0.12	0.05	0.00	1.87	14.76
1894	3.25	2.05	0.82	0.60	1.86	0.00	0.00	0.00	[0.08]	1.64	0.32	5.87	16.49
1895	6.30	[2.55]	1.94	0.89	0.58	0.00	0.00	0.00	0.00	0.78	0.82	1.46	15.32
1896	3.24	0.12	2.20	2.17	0.42	0.00	0.00	0.50	0.27	0.65	2.13	2.51	14.21
1897	1.10	3.63	3.70	0.40	0.08	0.32	0.00	0.00	0.12	0.70	0.40	1.25	11.70
1898	0.89	1.08	1.27	0.24	0.94	0.06	0.00	0.00	0.79	0.20	0.79	0.98	7.24
1899	2.79	0.66	3.07	0.50	0.50	0.05	0.00	0.09	0.00	3.69	2.31	1.39	15.05
1900	1.34	0.66	1.18	1.55	0.26	0.00	0.00	0.00	0.00	1.03	4.65	1.10	11.77
Mean (23 years, 1878–1900)	64.89	57.86	60.92	36.59	11.23	2.69	0.00	0.66	4.18	19.61	35.52	64.03	358.18

[a] Authority, Irrigation and Water Storage. [b] C. S. O., 1890. [c] C. W. B.

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

NAPA, NAPA COUNTY.

[Elevation, 20 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877	5.88	1.59	0.55	0.50	0.69	0.04	0.05	0.00	0.00	0.53	1.97	1.96	13.76
1878	14.18	10.52	4.33	0.90	0.25	0.00	0.00	0.00	1.49	1.91	0.83	0.37	34.78
1879	4.06	6.00	8.36	1.56	1.50	0.07	0.00	0.00	0.00	0.47	2.56	4.76	29.34
1880	2.62	1.38	1.67	11.87	1.16	0.00	0.00	0.00	0.00	0.00	0.00	9.75	28.45
1881	11.69	3.97	0.83	1.14	0.06	0.75	0.00	0.00	0.13	1.01	1.62	4.21	25.41
1882	3.40	2.19	2.85	1.67	0.00	0.00	0.00	0.00	2.11	0.44	3.26	1.07	16.99
1883	2.04	1.12	4.41	1.45	4.04	0.00	0.00	0.00	0.95	1.27	2.12	0.60	18.00
1884	3.02	3.89	5.72	4.71	0.13	2.12	0.00	0.00	0.00	0.70	0.00	10.16	30.45
1885	1.96	0.40	0.43	1.51	0.00	0.00	0.00	0.00	0.05	0.61	8.51	4.35	17.82
1886	8.09	0.00	1.81	4.42	0.38	0.00	0.00	0.00	0.00	1.16	0.11	2.58	18.56
1887	1.87	10.68	0.67	2.27	0.17	0.00	0.00	0.00	0.00	0.00	1.35	4.18	21.19
1888	4.87	1.28	4.18	0.65	0.88	0.00	0.00	0.00	0.49	0.00	2.96	5.30	20.61
1889	0.87	0.98	8.87	0.52	2.17	0.00	0.00	0.00	0.00	5.32	3.88	12.23	34.84
1890	9.86	6.59	6.42	2.08	1.91	0.00	0.00	0.00	0.39	0.00	0.00	3.41	30.66
1891	1.17	8.70	2.33	3.54	1.37	0.32	0.16	0.00	0.58	0.30	0.53	7.11	26.11
1892	3.65	3.43	2.26	2.14	2.73	0.09	0.00	0.00	T.	1.58	5.30	7.56	28.74
1893	4.27	2.19	4.31	1.05	0.49	0.00	0.00	0.00	0.19	0.17	4.03	1.86	18.56
1894	8.17	2.97	1.15	0.61	1.49	0.85	T.	0.04	1.23	1.93	1.34	9.37	29.15
1895	9.35	2.92	2.21	1.11	0.85	0.00	0.03	0.00	1.16	0.03	1.72	1.47	20.85
1896	9.28	0.25	3.60	6.28	1.10	0.00	T.	0.46	0.50	1.20	5.03	3.41	31.11
1897	2.29	5.68	5.88	0.33	0.25	0.46	0.00	0.00	0.26	2.43	1.40	1.74	20.72
1898	1.22	3.76	0.14	0.34	1.64	0.37	0.00	0.00	0.59	0.88	0.65	0.97	10.56
1899	6.17	T.	5.98	1.00	0.40	0.47	0.00	0.17	0.00	3.89	4.73	3.80	26.61
1900	2.84	0.41	2.90	1.60	0.31	T.	0.00	0.00	0.10	1.50	6.33	2.21	18.20
Mean (24 years)	5.12	3.37	3.41	2.22	1.00	0.23	0.01	0.03	0.43	1.14	2.51	4.35	23.81

NEEDLES, SAN BERNARDINO COUNTY.

[Elevation, 477 feet.]

1892	0.83	1.31	0.25	0.18	0.45	T.	0.10	0.00	T.	0.00	0.00	0.00	3.07
1893	T.	0.00	0.55	0.00	0.30	0.00	1.45	0.52	0.04	0.00	1.20	0.69	4.75
1894	0.00	0.12	0.65	0.00	T.	0.00	0.09	0.14	0.21	0.60	0.00	1.46	3.27
1895	1.38	0.08	0.06	0.09	0.00	0.00	T.	T.	0.18	T.	T.	0.00	1.74
1896	0.00	0.00	[0.27]	[0.04]	0.00	0.00	0.00	[0.28]	0.00	0.10	T.	1.33	2.02
1897	2.34	0.02	0.00	0.00	0.00	0.00	0.00	0.36	0.40	T.	0.06	0.10	3.28
1898	0.35	0.00	0.13	0.00	0.11	0.06	0.02	0.69	0.00	0.00	0.00	0.73	2.09
1899	0.58	T.	T.	0.00	0.09	0.08	1.00	0.00	0.28	0.19	0.78	T.	3.00
1900	0.02	0.00	T.	0.06	0.00	0.00	1.10	0.00	0.00	0.00	0.12	[0.62]	1.92
Mean (9 years)	0.61	0.16	0.21	0.04	0.11	0.02	0.42	0.22	0.11	0.10	0.24	0.55	2.79

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

NEVADA CITY, NEVADA COUNTY.

[Elevation, 2,580 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1864	0.90	0.50	5.38	3.25	2.75	0.00	0.00	0.75	0.00	0.00	17.05	17.42	48.00
1865	9.71	4.38	2.09	1.75	1.31	0.00	0.00	0.00	0.59	2.03	14.29	1.95	38.10
1866	15.47	5.60	14.24	0.59	4.50	0.00	0.00	0.00	0.00	0.00	9.61	32.70	82.71
1867	14.21	10.00	6.23	6.88	1.93	0.00	0.00	0.00	1.91	3.63	16.11	41.95	102.85
1868	11.01	6.36	23.30	7.22	1.50	2.72	0.00	0.00	0.34	0.43	1.49	16.62	64.54
1869	16.85	12.62	6.96	5.72	1.62	0.04	0.00	0.00	0.15	0.50	4.67	6.29	55.42
1870	9.23	14.48	7.58	4.70	0.65	0.36	0.03	0.00	0.00	3.82	4.32	5.32	50.49
1871	11.08	6.26	5.41	5.55	3.26	0.33	0.00	0.00	0.00	0.79	5.00	27.31	64.99
1872	18.16	16.67	5.28	3.76	0.17	1.08	0.00	0.00	0.00	0.55	4.05	12.25	61.97
1873	2.82	12.40	1.96	2.47	2.20	0.00	0.00	0.00	0.00	0.67	1.35	24.27	48.14
1874	11.16	7.32	12.20	4.51	1.32	0.11	0.00	0.00	0.00	3.06	15.08	0.90	55.66
1875	16.57	2.11	3.97	0.27	1.56	2.43	0.00	0.00	0.00	1.75	16.56	5.90	51.12
1876	12.47	12.41	13.88	2.17	1.53	0.00	0.00	0.00	0.41	9.85	1.04	0.00	53.76
1877	10.26	2.45	4.18	1.43	1.97	0.72	0.71	0.00	0.00	1.35	4.31	2.65	30.03
1878	17.62	16.61	10.05	2.80	1.05	0.00	0.00	0.00	0.69	2.32	2.86	0.96	54.98
1879	11.62	10.97	19.28	5.90	3.83	0.43	0.00	0.05	0.00	3.15	5.50	8.76	69.49
1880	6.67	5.48	5.09	22.54	5.58	0.15	0.00	0.00	0.00	0.06	0.28	24.78	70.63
1881	18.88	6.26	4.44	1.70	0.00	1.47	0.00	0.00	1.38	3.03	2.53	9.14	48.83
1882	7.29	5.42	9.21	4.39	0.52	0.60	0.00	0.00	2.22	7.65	5.34	3.87	46.51
1883	2.39	3.06	14.27	2.98	6.92	0.00	0.00	0.00	1.28	3.60	1.61	2.84	38.96
1884	9.06	12.01	14.70	12.07	1.67	2.47	0.07	0.00	1.87	3.61	0.00	27.92	85.47
1885	4.39	1.69	0.53	3.23	0.21	1.36	0.00	0.00	1.62	0.00	21.55	6.77	41.35
1893[a]	8.02	8.29	12.75	6.22	1.33	0.00	T.	0.00	1.71	1.25	7.78	5.23	52.58
1894	11.71	10.85	3.26	2.17	3.54	1.85	0.00	T.	1.21	4.83	1.38	20.61	61.41
1895	22.87	5.53	5.12	3.82	3.42	0.00	0.15	0.29	3.36	0.00	1.87	6.14	52.57
1896	19.61	0.99	7.39	13.63	4.88	T.	0.05	0.05	1.55	2.18	12.63	6.46	69.42
1897	4.38	13.63	9.13	2.08	0.22	0.82	0.00	T.	0.60	3.36	4.88	3.71	42.31
1898	1.92	9.91	0.87	0.95	2.73	1.27	0.00	T.	0.37	1.96	3.49	2.27	25.74
1899	9.12	0.49	15.88	1.52	2.61	0.91	0.00	0.29	0.00	10.24	10.85	10.27	62.18
1900	7.81	2.36	7.51	4.83	1.90	0.03	0.00	0.00	0.55	5.52	9.22	4.00	43.73
Mean (30 years)	10.78	7.57	8.40	4.70	2.22	0.62	0.03	0.05	0.73	2.71	6.87	11.11	55.80

NEWCASTLE, PLACER COUNTY.

[Elevation, 956 feet.]

1892	3.98	3.71	5.14	2.48	4.23	0.03	0.00	0.00	0.06	1.57	8.66	6.39	36.25
1893	2.61	3.07	5.36	2.48	0.19	0.00	0.00	0.00	0.40	0.17	2.30	1.65	18.23
1894	3.55	4.68	0.59	1.22	1.65	1.76	0.00	0.00	0.00	2.88	0.95	8.70	25.98
1895	13.10	3.42	3.42	2.49	1.69	0.00	0.04	0.02	2.00	T.	1.40	2.91	30.49
1896	10.08	0.66	4.81	6.92	1.79	0.00	0.04	0.31	1.28	1.07	8.16	2.46	37.58
1897[b]													
1898[b]													
1899	2.63	0.00	9.05	0.05	0.42	1.02	0.00	0.00	0.00	4.91	6.63	5.85	30.56
1900	4.95	0.94	3.38	2.40	1.62	0.00	0.00	0.00	0.25	3.58	5.77	1.65	24.54
Mean (7 years)	5.84	2.35	4.54	2.29	1.66	0.40	0.01	0.05	0.57	2.03	4.84	4.23	29.09

[a] Data missing, 1886–1892.

[b] No record for 1897–98.

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued

NEWHALL, LOS ANGELES COUNTY

[Elevation, 1,200 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877	1.56	T.	0.43	0.50	0.56	0.00	0.00	0.00	0.00	0.03	0.32	1.45	4.85
1878	3.78	3.23	1.02	1.46	0.15	0.00	0.00	0.00	0.00	0.00	0.00	2.33	11.97
1879	2.25	0.62	0.00	1.52	0.05	0.00	0.00	0.00	0.00	0.37	3.10	9.23	17.14
1880	0.10	2.25	1.08	3.39	0.00	0.00	0.00	0.00	0.00	0.00	0.26	6.22	13.30
1881	0.57	0.06	1.70	0.34	0.00	0.00	0.00	0.00	0.00	1.23	0.12	4.21	8.23
1882	0.43	2.36	4.71	0.93	0.00	0.00	0.00	0.00	0.00	0.16	1.20	0.00	9.79
1883	1.96	2.95	3.07	0.00	2.28	0.00	0.00	0.00	0.00	0.16	0.00	3.34	13.76
1884	6.66	14.53	9.73	3.85	2.17	1.67	0.00	0.00	0.00	0.60	1.10	3.89	44.20
1885	0.47	0.00	0.07	1.75	0.00	0.06	0.02	0.00	0.00	0.00	9.01	2.25	13.63
1886	5.22	0.69	3.11	4.27	0.00	T.	0.00	0.00	0.00	0.00	0.87	0.21	14.37
1887	0.00	12.38	0.15	1.96	0.10	0.03	0.00	0.00	0.02	0.65	1.46	4.26	21.01
1888	6.74	1.17	4.21	0.29	0.04	0.00	0.00	0.00	0.00	0.40	3.69	5.64	22.18
1889	0.35	1.11	9.89	0.40	0.56	0.00	0.00	0.36	0.00	8.19	3.36	15.70	39.42
1890	6.30	4.41	0.44	0.33	0.00	0.00	0.00	0.00	0.35	0.00	0.00	1.94	13.77
1891	0.31	9.99	0.88	1.26	0.66	0.00	T.	0.00	0.13	0.00	0.00	2.12	15.35
1892	1.32	3.02	4.07	0.06	2.08	0.00	0.00	0.00	0.00	0.30	4.72	4.16	19.73
1893	3.91	1.34	7.90	0.47	0.34	0.00	0.00	0.00	0.00	0.72	0.00	3.90	18.58
1894	0.85	0.29	0.62	0.15	0.66	0.00	0.00	0.00	0.80	0.00	0.00	7.59	10.96
1895	7.11	0.31	3.66	0.39	0.00	0.00	0.00	0.00	0.00	0.10	1.09	0.00	12.66
1896	2.15	0.15	4.04	1.03	0.20	0.00	0.00	0.25	0.00	1.55	1.00	2.23	12.60
1897	4.86	5.13	3.32	0.00	0.08	0.00	0.00	0.00	0.00	1.00	0.00	0.00	14.39
1898	0.45	[3.14]	0.00	0.10	0.93	0.00	0.00	0.00	0.14	0.00	0.00	0.22	4.98
1899	2.77	0.00	1.98	0.08	0.00	0.25	0.00	0.00	0.00	1.63	0.90	0.64	8.25
1900	0.89	0.00	1.97	0.25	1.31	0.00	0.00	0.00	0.00	0.08	5.24	0.00	9.74
Mean (24 years)	2.54	2.88	2.81	1.03	0.51	0.08	T.	0.08	0.06	0.72	1.56	3.40	15.62

NEWMAN, STANISLAUS COUNTY.

[Elevation, 92 feet.]

1889	0.51	0.64	3.67	0.25	0.99	0.00	0.00	0.00	0.00	4.28	4.27	5.52	20.13
1890	4.56	3.34	0.80	0.70	0.20	0.00	0.00	0.00	1.31	0.00	0.00	1.17	12.08
1891	0.28	3.27	1.82	1.55	0.10	0.18	0.00	0.00	0.49	0.05	0.00	3.69	11.43
1892	0.27	1.45	1.77	0.55	0.81	0.00	0.00	0.00	0.00	0.28	1.46	4.24	10.83
1893	1.03	2.87	4.73	1.67	0.00	0.00	0.00	0.30	0.00	0.00	0.39	0.47	11.16
1894	1.97	0.89	0.00	T.	0.83	0.33	0.00	0.00	0.80	0.35	0.00	5.28	10.45
1895	3.34	0.87	1.77	0.80	0.90	0.00	0.00	0.00	0.10	0.00	0.48	0.40	8.66
1896	5.59	0.00	1.32	1.91	0.43	0.00	0.10	0.00	0.00	1.35	1.97	0.87	13.54
1897	1.83	2.61	1.85	0.47	0.02	0.20	0.00	0.10	T.	1.37	0.33	1.00	9.78
1898	0.45	0.84	0.80	0.03	0.75	0.00	0.00	0.00	0.07	0.13	T.	0.41	3.48
1899	2.19	0.00	2.05	0.30	1.05	0.07	0.00	0.00	0.00	1.65	2.41	1.25	10.97
1900	1.94	0.10	0.45	1.91	1.87	T.	0.00	0.00	0.32	0.35	4.45	0.81	12.20
Mean (12 years)	2.00	1.41	1.75	0.84	0.66	0.06	0.01	0.01	0.26	0.82	1.31	2.09	11.23

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

NILES (NEAR), ALAMEDA COUNTY.

[Elevation, 87 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1886	5.63	0.73	1.67	4.19	0.25	0.01	T.	0.00	0.00	0.64	1.29	1.14	15.55
1887	1.07	7.62	1.01	1.87	0.14	0.07	0.01	0.00	0.65	T.	0.84	3.25	16.39
1888	3.99	1.80	3.07	0.15	0.78	0.40	0.00	T.	0.39	0.07	3.87	2.53	17.05
1889	0.55	0.42	5.59	0.95	1.59	0.01	0.00	0.00	0.00	4.30	3.44	12.13	28.98
1890	7.18	3.63	3.03	1.12	1.08	0.00	0.00	0.00	0.45	0.00	0.00	3.05	19.54
1891	0.65	4.72	2.57	2.23	1.10	0.06	0.00	0.00	0.21	0.06	0.37	6.45	18.42
1892	1.12	1.41	3.71	1.10	1.96	T.	0.03	0.00	0.01	1.58	3.49	5.28	19.64
1893	2.65	2.73	5.58	1.67	0.47	0.02	0.00	0.00	0.14	0.23	2.44	2.69	18.62
1894	7.28	4.99	1.23	0.54	1.94	0.43	T.	0.00	1.42	1.49	0.84	9.45	29.61
1895	6.81	2.55	2.15	1.73	0.86	0.00	T.	0.00	0.75	0.72	1.80	1.86	18.73
1896	7.45	0.30	1.66	4.47	1.07	0.00	0.10	0.83	0.57	1.22	6.16	2.91	26.74
1897	2.08	4.47	4.78	0.45	0.16	0.29	0.00	0.00	0.00	2.42	0.92	1.95	15.72
1898	1.71	2.20	0.88	0.39	1.28	0.24	0.00	0.00	1.46	1.33	0.68	1.65	11.82
1899	2.78	0.49	6.09	0.26	0.66	0.49	T.	0.09	0.00	4.24	3.30	2.91	21.31
1900	3.49	0.87	1.87	0.91	0.79	0.08	T.	0.00	0.02	2.02	4.67	1.65	16.37
Mean (15 years)	3.63	2.60	2.99	1.47	0.94	0.13	0.01	0.06	0.40	1.35	2.27	3.89	19.75

NORTH BLOOMFIELD, NEVADA COUNTY.

[Elevation, 3,200 feet.]

1871	7.54	5.94	5.03	4.36	3.36	0.12	0.00	0.00	0.00	0.83	6.20	25.19	58.57
1872	12.71	18.22	5.73	3.84	1.39	0.41	0.00	0.00	0.16	0.53	4.47	11.77	59.23
1873	4.16	11.09	2.50	2.40	1.57	0.00	0.10	0.00	0.00	0.67	3.37	19.00	44.86
1874	15.17	7.08	11.16	4.04	1.78	0.25	0.00	0.02	0.06	4.88	13.52	1.21	59.17
1875	0.15	0.88	3.56	0.30	2.68	0.63	0.00	0.00	0.00	2.09	15.53	7.64	33.46
1876	10.98	10.20	13.02	4.03	1.06	0.01	1.76	0.01	0.31	10.46	0.85	0.00	52.69
1877	9.98	2.89	4.92	3.07	2.66	0.91	0.00	0.00	0.00	1.10	4.22	1.96	31.71
1878	15.72	16.97	9.23	2.44	0.95	0.00	0.00	0.00	0.00	3.34	3.72	1.18	53.55
1879	10.00	9.49	16.62	6.69	3.84	0.64	0.00	0.24	0.00	3.03	6.43	13.57	70.55
1880	5.96	5.66	5.45	23.31	5.63	0.00	0.00	0.00	0.00	0.00	0.41	21.10	67.52
1881	19.46	12.13	4.92	2.59	1.33	1.57	0.00	0.00	1.75	3.86	4.05	8.73	60.39
1882	8.02	6.77	10.02	5.39	1.82	0.00	0.00	0.00	2.74	6.86	5.72	3.59	50.93
1883	3.69	3.94	10.45	3.89	0.00	0.00	0.00	0.00	1.79	3.66	1.48	2.84	31.24
1884	9.21	10.02	15.65	10.31	2.66	4.03	0.00	0.00	1.98	3.43	0.00	37.21	94.50
1885	3.65	1.91	0.79	3.62	0.71	2.14	0.00	0.00	2.55	0.00	20.23	7.98	43.58
1897	5.06	16.57	11.15	3.70	0.20	1.45	0.00	0.11	0.57	5.05	6.12	5.41	55.39
1898	2.28	13.03	0.79	1.18	4.47	1.70	T.	T.	0.58	2.87	5.66	4.10	36.66
1899	10.88	1.01	18.24	1.98	3.91	0.65	0.00	0.67	0.00	14.52	13.33	13.09	78.28
1900	9.32	5.20	9.64	6.82	2.44	T.	0.01	0.00	0.95	8.32	10.99	4.95	58.64
1901	7.73	13.46	2.97	6.27	1.73	0.00	T.	.....	.....	.....	.....	.....	.....
Mean (20 years)	8.46	8.99	7.71	3.74	2.12	0.82	0.11	0.02	0.73	3.10	6.00	10.15	53.16

NORTH HILL VINEYARD, CALAVERAS COUNTY.

[Elevation, 660 feet.]

1890	5.74	2.33	2.29	1.33	2.43	0.00	0.00	0.00	0.50	T.	T.	2.62	17.24
1891	0.39	2.71	3.55	2.70	0.37	0.22	0.00	0.00	0.23	0.02	0.25	4.85	15.29
1892	1.34	1.71	3.62	1.63	3.02	0.33	0.00	0.00	0.25	1.18	5.33	4.54	22.95
1893	3.70	2.87	7.51	1.32	0.00	0.00	0.02	0.00	0.58	0.02	1.94	2.66	20.62
1894	6.31	7.05	1.16	0.98	3.21	1.46	T.	T.	1.51	1.77	1.23	10.53	35.21
1895	8.65	2.30	2.31	2.91	1.10	0.00	T.	0.00	0.59	0.08	1.11	3.09	22.14
1896	9.30	0.10	2.76	6.24	0.71	0.00	T.	0.01	0.04	1.45	5.01	3.72	29.34
1897	3.22	6.63	5.37	0.47	0.83	0.58	0.00	0.01	0.18	2.30	1.07	1.50	22.16
1898	1.22	4.03	0.92	0.57	1.41	0.09	0.00	0.00	0.58	1.05	1.20	3.35	14.42
1899	4.65	0.24	10.88	0.42	1.81	0.40	0.00	0.12	0.00	4.49	3.87	3.02	29.90
1900	1.57	0.71	3.38	3.67	1.49	0.01	0.00	0.00	0.17	1.15	4.25	0.97	17.37
Mean (11 years)	4.19	2.79	3.98	2.02	1.49	0.28	T.	0.01	0.42	1.23	2.30	3.71	22.42

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

NORTH ONTARIO, SAN BERNARDINO COUNTY.

[Elevation, 1,750 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1897	5.26	7.82	5.23	0.00	0.90	0.00	0.00	T.	0.00	3.71	0.40	0.43	24.05
1898	2.30	1.11	1.55	0.50	2.75	0.00	0.06	0.00	T.	0.28	0.12	0.55	9.22
1899	2.88	0.63	2.71	0.19	0.05	0.90	0.00	T.	0.05	1.73	1.78	1.05	11.97
1900	1.75	0.19	1.93	1.68	2.77	0.00	0.00	0.00	0.64	0.40	8.17	0.00	17.53
1901	5.33	6.10	0.72	0.78	1.50	0.00	0.00	.....	.....	.....	.....	.....	.....
Mean (5 years)	3.50	3.17	2.55	0.63	1.59	0.18	0.01	.....	.....	.....	.....	.....	.....

NORTH SAN JUAN, NEVADA COUNTY.

[Elevation, 2,180 feet.]

1897	4.20	13.70	7.88	2.20	0.03	1.45	0.00	0.03	0.74	4.33	5.80	1.65	42.01
1898	3.11	8.72	0.54	1.00	4.16	0.74	0.00	T.	0.88	3.49	4.56	1.88	29.08
1899	10.25	0.85	16.02	1.36	8.00	0.40	0.00	0.66	0.00	10.04	11.92	12.41	66.91
1900	6.36	3.88	5.34	4.87	1.16	T.	T.	0.00	T.	7.77	8.81	5.07	43.26
1901	11.97	12.44	4.51	4.59	1.31	0.00	T.	.....	.....	.....	.....	.....	.....
Mean (5 years)	7.18	7.92	6.86	2.80	1.93	0.52	T.	.....	.....	.....	.....	.....	.....

OAKDALE, STANISLAUS COUNTY.

[Elevation, 156 feet.]

1893	1.88	2.36	5.29	0.78	0.21	0.00	T.	0.00	0.28	0.00	1.45	1.60	13.85
1894	5.46	5.20	0.50	0.88	2.38	1.05	0.00	0.00	0.36	1.23	0.65	7.71	25.42
1895	5.72	2.24	2.01	1.62	0.51	0.00	0.00	0.00	0.20	0.29	1.08	1.24	14.86
1896	5.28	0.00	1.44	3.84	0.58	0.00	0.00	0.10	0.00	1.61	3.07	1.53	17.45
1897	2.58	3.46	2.72	0.65	0.06	0.12	0.00	0.04	0.24	1.53	0.54	1.25	13.19
1898	0.68	1.01	0.25	0.15	1.52	0.00	0.00	0.00	0.00	0.76	0.49	1.63	6.49
1899	2.28	0.11	4.64	0.04	0.00	1.56	0.00	0.04	0.00	2.77	3.21	1.82	16.47
1900	1.49	0.18	2.14	2.80	1.60	0.00	0.00	0.00	0.00	0.95	5.61	1.08	15.85
Mean (8 years)	3.17	1.82	2.37	1.34	0.86	0.34	T.	0.02	0.14	1.14	2.00	2.23	15.45

OGILBY, SAN DIEGO COUNTY.

[Elevation, 354 feet.]

1890	0.29	0.36	0.00	0.00	0.02	0.00	0.00	0.05	0.00	0.14	0.02	0.31	1.19
1891	0.00	1.30	0.00	0.00	0.00	0.00	0.00	0.46	0.02	0.00	0.00	0.00	1.78
1892	0.55	1.22	1.07	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.94
1893	T.	0.00	0.19	0.00	0.38	0.00	1.02	0.03	0.39	0.00	0.27	0.23	2.51
1894	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.00	0.00	0.90
1895	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.75
1896	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
1897	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
1898	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T.	T.
1899	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1900	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T.	0.00	0.00	0.00	T.
Mean (11 years)	0.21	0.26	0.14	0.00	0.05	0.00	0.09	0.05	0.10	0.01	0.04	0.15	1.10

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

OLETA, AMADOR COUNTY.

[Elevation, 1,510 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1892	3.44	4.52	7.59	3.04	4.54	0.25	0.00	0.00	0.00	1.50	10.70	7.51	43.09
1893	6.88	4.88	11.40	2.65	0.63	0.00	0.00	0.00	0.00	0.38	4.58	3.18	34.53
1894	7.23	9.01	1.11	1.13	3.69	1.06	T.	T.	1.38	4.50	1.87	16.55	47.03
1895	13.25	5.75	3.94	4.25	2.25	0.00	T.	T.	2.13	0.12	0.74	3.50	35.93
1896	9.94	0.87	5.41	9.55	2.41	0.06	0.00	0.24	0.12	1.06	8.05	4.51	42.22
1897	5.49	14.44	8.13	1.50	0.35	0.74	T.	T.	0.12	3.00	2.20	3.01	38.98
1898	1.64	5.80	1.36	0.68	1.96	0.35	T.	0.00	0.30	0.80	2.34	2.24	17.47
1899	5.29	0.96	12.43	1.33	1.01	0.71	0.00	0.17	T.	6.98	5.42	7.82	42.12
1900	2.33	2.90	4.66	3.87	1.24	0.03	T.	0.00	0.30	2.76	7.76	1.61	27.46
Mean (9 years)	6.17	5.46	6.23	3.11	2.01	0.36	T.	0.05	0.48	2.34	4.79	5.55	36.54

ORLAND, GLENN COUNTY.

[Elevation 254 feet.]

1883	0.52	0.27	1.49	0.86	2.07	0.02	0.00	0.00	0.80	1.60	0.12	0.29	8.04
1884	3.38	1.58	4.31	2.97	0.23	2.55	0.00	0.00	0.20	0.80	0.00	4.03	20.05
1885	1.34	0.58	0.00	0.51	0.82	0.50	0.00	0.00	0.22	0.00	9.41	3.03	16.41
1886	4.45	0.50	1.01	2.70	0.64	0.00	0.00	0.00	0.00	0.50	T.	1.77	11.57
1887	0.33	3.74	1.63	2.06	0.00	0.15	0.00	T.	0.00	0.00	1.14	2.64	11.69
1888	4.11	1.56	2.73	0.57	0.24	0.53	0.00	0.00	0.27	0.00	2.79	3.47	16.27
1889	0.22	0.58	4.52	1.02	1.37	0.38	0.00	0.00	0.00	7.96	2.20	6.80	25.05
1890	3.29	1.63	3.59	0.53	1.75	0.00	0.00	0.00	0.00	0.00	0.00	2.46	13.25
1891	0.55	7.88	0.33	1.38	1.12	1.40	0.00	0.00	0.09	0.63	0.36	2.21	15.95
1892	3.08	1.93	1.87	1.16	2.50	0.20	0.00	0.00	0.00	0.95	4.77	5.67	22.13
1893	4.13	3.22	3.47	1.79	0.00	0.00	0.00	0.00	0.91	0.43	1.97	1.23	17.15
1894	3.13	2.75	0.40	0.53	1.08	0.35	0.00	0.00	0.80	0.72	0.43	7.89	18.08
1895	8.25	2.66	2.09	1.24	0.58	0.00	0.27	0.00	1.67	0.00	1.34	1.15	19.25
1896	8.54	0.05	4.25	3.03	1.65	0.00	T.	0.37	0.83	1.02	2.69	6.14	28.57
1897	3.58	4.01	1.92	1.79	0.00	0.60	0.00	0.00	0.10	0.00	0.73	1.41	14.14
1898	0.36	3.64	T.	0.00	1.65	0.00	0.00	0.00	0.40	0.32	0.34	1.22	7.93
1899	6.98	T.	4.17	0.45	0.94	0.57	0.00	0.00	0.00	2.03	4.58	2.69	22.41
1900	2.58	0.84	1.32	2.72	1.05	0.31	0.00	0.07	0.07	3.20	4.61	1.68	18.40
Mean (18 years)	3.27	2.08	2.17	1.41	0.98	0.42	0.02	0.02	0.35	1.12	2.08	3.10	17.02

OROVILLE, BUTTE COUNTY.

[Elevation, 188 feet.]

1885	2.10	0.73	0.25	1.64	0.65	0.39	T.	0.00	0.20	T.	11.27	5.53	22.76
1886	5.17	0.36	2.70	5.48	0.50	0.00	T.	T.	0.00	0.63	0.29	2.52	17.65
1887	1.02	8.93	0.98	2.81	0.08	0.18	T.	0.01	0.15	0.00	1.21	2.62	17.99
1888	7.72	0.99	3.44	0.14	0.32	1.16	0.07	T.	0.63	0.00	4.14	7.91	26.52
1889	0.16	0.57	8.98	1.61	3.07	0.42	0.00	0.00	0.06	7.41	4.89	13.50	40.61
1890	4.00	5.95	7.07	2.47	3.84	0.45	0.00	0.00	0.75	0.00	0.75	4.61	29.89
1891	2.50	9.04	0.69	1.73	1.30	0.00	0.00	0.00	0.03	0.34	1.56	4.97	22.16
1892	4.60	3.81	4.82	3.53	3.24	0.00	0.00	0.00	0.00	1.22	6.99	3.52	31.73
1893	4.06	3.82	6.47	1.21	1.17	0.00	0.00	0.00	0.92	0.10	4.03	2.18	23.96
1894	5.97	3.21	0.95	1.20	2.85	0.45	0.00	0.00	0.86	2.40	1.07	11.48	30.44
1895	11.92	0.85	2.60	2.65	0.65	0.00	0.33	0.00	4.25	0.11	1.85	2.59	27.80
1896	11.41	0.38	4.19	7.03	2.08	0.00	0.15	0.23	1.40	0.90	6.80	4.64	38.71
1897	4.20	8.60	2.23	0.35	0.30	0.30	0.00	0.00	0.80	2.95	2.65	1.95	24.33
1898	1.01	6.03	0.07	0.58	1.63	0.80	0.00	0.00	0.39	0.85	1.12	1.80	13.78
1899	7.24	0.00	6.89	0.71	3.25	1.22	0.00	0.15	0.00	8.31	7.59	4.38	39.74
1900	5.79	1.07	2.79	3.25	1.03	0.35	0.00	0.00	0.44	3.28	4.20	2.43	24.63
Mean (16 years)	4.93	3.33	3.44	2.27	1.62	0.33	0.03	0.02	0.68	1.78	3.74	4.79	27.04

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

PALERMO, BUTTE COUNTY.

[Elevation, 213 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1892	2.94	3.68	3.92	4.08	2.81	0.14	0.00	0.00	T.	1.19	6.44	6.29	31.44
1893	3.77	2.92	3.81	1.00	1.60	0.00	0.00	0.00	0.50	0.14	2.58	1.76	18.08
1894	3.76	2.34	0.79	0.74	3.41	0.30	T.	0.00	0.83	2.46	1.07	10.20	25.90
1895	10.08	2.83	1.91	1.96	0.76	0.00	0.30	0.05	3.76	0.06	1.20	0.67	23.58
1896	10.03	0.26	2.31	3.78	0.80	0.00	0.03	0.22	1.17	0.54	5.83	3.98	28.95
1897	3.35	6.79	1.92	0.76	0.20	0.89	0.00	0.06	0.33	3.50	2.07	0.45	20.32
1898	1.24	0.83	0.00	0.59	1.75	0.12	0.00	0.00	0.34	0.94	1.16	1.55	8.52
1899	5.45	0.00	5.88	0.16	0.92	1.30	0.00	0.18	0.00	5.76	6.46	3.72	29.83
1900	5.80	0.72	2.29	1.86	0.87	0.20	0.00	0.00	0.27	3.43	3.63	2.15	21.22
Mean (9 years)	5.16	2.26	2.54	1.66	1.46	0.33	0.04	0.06	0.80	2.00	3.38	3.42	23.09

PALM SPRINGS, RIVERSIDE COUNTY.

[Elevation, 584 feet.]

1889	0.30	0.06	1.54	0.00	0.01	0.00	0.00	0.07	0.00	0.53	0.00	4.64	7.15
1890	0.52	0.10	0.00	0.00	0.00	0.00	0.00	0.25	0.38	0.00	0.00	0.50	1.75
1891	0.00	7.44	0.00	0.00	0.00	0.00	0.08	1.02	0.10	0.00	0.00	0.23	8.82
1892	2.18	0.26	0.05	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.61
1893	0.40	0.00	1.18	0.00	0.10	0.00	0.35	0.40	0.10	0.00	3.00	0.11	5.64
1894	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.25	4.25
1895	3.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.50	3.50
1896	0.00	0.00	0.81	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84
1897	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	1.09
1898	0.00	0.00	0.60	0.00	T.	0.00	0.00	0.00	0.00	0.00	0.00	0.70	1.30
1899	1.21	0.12	0.00	0.00	0.00	0.00	0.00	0.62	T.	0.00	0.50	2.86	5.31
1900	0.80	0.00	0.00	0.00	0.00	0.00	T.	0.00	0.00	1.29	T.	0.00	2.09
Mean (12 years)	0.74	0.66	0.35	T.	0.02	0.00	0.03	0.19	0.05	0.15	0.29	1.20	3.58

PASADENA, LOS ANGELES COUNTY.

[Elevation, 828 feet.]

1893	7.53	3.03	10.47	0.66	0.20	0.06	0.01	T.	0.04	0.71	0.18	4.08	26.97
1894	1.45	0.74	0.96	0.13	0.61	0.00	0.00	0.09	0.85	0.02	0.01	5.89	10.75
1895	7.56	[1.81]	4.27	0.61	0.41	[0.01]	0.00	0.00	T.	[0.98]	[0.40]	[2.64]	18.69
1896	2.71	0.00	2.88	0.00	0.00	0.00	0.00	0.00	0.00	1.74	1.79	2.07	11.19
1897	3.69	4.78	2.43	0.14	0.00	0.00	0.00	0.00	0.00	2.42	0.00	0.62	14.08
1898	1.85	0.50	1.05	0.14	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.55	5.44
1899	3.55	0.00	1.89	T.	0.00	0.65	0.00	0.00	0.00	1.98	1.40	0.89	10.36
1900	0.88	0.00	1.15	0.48	1.76	0.00	0.00	0.00	T.	0.00	8.86	0.00	13.13
Mean (8 years)	3.65	1.36	3.14	0.27	0.54	0.09	T.	0.01	0.11	0.98	1.58	2.09	13.83

PASO ROBLES, SAN LUIS OBISPO COUNTY.

[Elevation, 800 feet.]

1887	0.51	6.14	0.34	1.10	0.44	0.00	0.00	0.00	0.00	0.21	0.60	2.61	11.95
1888	5.60	0.30	4.50	0.20	0.28	0.00	0.00	0.00	0.01	0.00	4.02	2.80	17.71
1889	0.78	0.98	5.55	0.45	1.25	0.00	0.00	0.00	0.00	5.61	1.69	9.13	25.44
1890	6.75	5.40	1.74	0.03	0.22	0.00	0.00	0.00	0.65	0.00	0.30	3.34	18.43
1891	0.52	7.27	2.51	1.72	0.06	0.05	0.00	0.00	0.41	0.00	0.00	4.09	16.63
1892	0.63	1.39	3.09	0.11	1.88	0.38	0.00	0.00	0.00	0.46	2.06	5.02	15.02
1893	3.28	4.09	6.28	1.09	0.27	0.00	0.00	0.00	0.00	0.24	0.00	2.38	17.63
1894	1.06	0.59	0.22	0.24	1.09	0.12	0.00	0.50	1.13	0.33	0.09	6.14	11.51
1895	6.43	0.47	1.28	0.48	0.08	0.00	0.00	0.00	0.00	0.61	1.53	0.55	11.43
1896	4.64	0.02	3.77	1.25	0.77	T.	T.	1.19	T.	1.66	1.92	2.48	17.70
1897	3.65	4.18	2.88	T.	0.00	0.00	0.00	0.02	0.03	0.56	0.05	0.23	11.60
1898	0.82	1.55	0.83	0.00	0.68	0.00	0.00	0.00	0.10	0.13	0.30	0.27	4.68
1899	4.16	0.08	4.99	1.37	T.	0.13	0.00	0.00	T.	2.55	1.40	2.53	17.21
1900	2.11	0.08	1.90	0.42	0.67	T.	T.	T.	T.	1.54	6.10	0.25	13.07
Mean (14 years)	2.92	2.32	2.85	0.60	0.55	0.05	T.	0.12	0.17	0.92	1.43	2.92	15.00

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

PEACHLAND, SONOMA COUNTY.

[Elevation, 220 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1896	17.55	0.40	3.85	6.08	2.26	0.00	0.07	0.08	0.60	2.59	5.53	8.83	47.79
1897	5.60	8.63	6.62	0.12	0.51	1.31	T.	T.	0.13	3.17	2.34	4.01	32.44
1898	2.15	8.28	0.16	0.37	3.87	0.41	T.	T.	0.89	0.85	1.25	1.38	19.61
1899	16.16	0.19	10.25	0.35	1.99	0.01	T.	0.19	0.00	6.57	8.46	6.20	50.37
1900	7.88	1.15	4.88	4.16	1.08	0.31	T.	T.	0.19	6.09	5.86	5.10	36.65
Mean (5 years)	9.87	3.73	5.15	2.21	1.93	0.41	0.01	0.05	0.36	3.85	4.69	5.10	37.37

PLACERVILLE, ELDORADO COUNTY.

[Elevation, 1,820 feet.]

1874	12.58	4.72	10.77	3.92	1.96	0.00	0.00	0.00	0.00	3.42	9.59	1.18	48.14
1875	12.58	0.08	2.88	0.61	1.58	1.84	0.00	0.00	0.00	1.20	17.64	6.75	45.16
1876	10.79	8.01	11.86	3.60	1.40	0.00	0.49	0.07	0.02	6.16	0.78	0.00	43.18
1880	4.38	5.81	4.66	17.52	3.95	0.00	0.00	0.00	0.00	0.35	0.58	16.94	54.19
1881	15.53	7.01	3.38	2.36	T.	1.89	T.	0.00	1.08	2.80	2.87	7.70	44.62
1882	6.71	5.15	9.30	5.53	1.19	0.13	T.	0.00	0.98	5.72	4.94	1.98	41.58
1883	3.74	2.58	6.88	3.54	6.25	0.00	T.	0.00	1.67	3.38	1.67	2.63	32.34
1884	6.06	11.56	14.46	11.82	1.60	2.51	T.	0.08	0.85	2.47	0.10	22.65	74.11
1885	4.15	0.97	0.33	3.32	0.27	1.42	0.00	0.00	0.55	0.00	15.97	5.22	32.20
1886	13.03	1.15	5.22	11.75	1.24	0.50	T.	0.00	0.00	1.42	0.91	5.02	40.24
1887	3.18	14.18	2.09	5.71	0.53	0.28	0.00	0.00	0.58	0.06	1.42	8.34	36.37
1888	11.27	2.39	5.26	0.91	1.10	1.50	0.04	T.	0.88	T.	5.98	7.06	36.39
1889	1.08	0.86	9.78	1.93	8.05	0.16	0.00	T.	0.00	9.07	7.77	18.18	56.83
1890	14.57	7.46	13.81	3.36	4.01	0.00	0.00	T.	1.64	T.	T.	6.89	51.74
1891	1.40	9.29	8.18	4.29	1.91	1.20	0.00	0.00	0.37	0.32	1.97	12.57	41.50
1892	4.43	6.83	8.26	4.33	5.35	0.00	0.00	0.00	0.20	2.23	12.14	15.48	59.25
1893	7.14	6.94	12.39	5.31	1.71	0.00	T.	0.00	1.26	0.96	5.74	4.68	46.13
1894	11.05	13.02	2.94	2.24	4.70	1.63	T.	0.10	1.52	3.93	1.06	18.49	60.68
1895	17.85	5.07	4.43	4.75	2.58	0.00	T.	T.	1.79	0.16	0.77	5.24	42.64
1896	16.38	0.78	11.11	12.00	3.56	0.00	0.03	0.15	0.63	1.51	11.71	4.07	61.93
1897	4.68	14.61	9.49	2.23	0.36	1.09	0.00	0.05	0.13	3.39	2.68	2.43	41.14
1898	1.78	6.18	1.28	0.58	2.70	0.66	T.	T.	0.11	1.00	2.30	2.80	19.39
1899	5.62	0.48	14.98	2.01	1.78	0.88	0.00	0.10	0.00	7.73	6.72	8.32	48.62
1900	3.92	2.89	5.84	4.32	1.15	[0.68]	T.	0.00	0.55	8.62	9.82	3.30	36.09
Mean (24 years)	8.08	5.75	7.48	4.91	2.45	0.68	0.02	0.02	0.62	2.54	5.21	7.83	45.60

POINT LOBOS.

[Elevation, 250 feet.]

1893	3.19	2.53	3.74	1.01	0.19	0.01	T.	0.14	0.14	0.28	3.59	1.05	15.87
1894	5.17	2.48	0.62	0.15	1.71	0.55	T.	T.	1.40	1.36	0.68	9.21	23.33
1895	5.61	2.30	1.91	1.09	0.75	0.00	0.03	0.01	0.88	0.11	2.33	1.06	16.08
1896	7.33	0.41	3.45	3.99	0.91	T.	0.02	0.26	0.46	1.58	4.99	4.16	27.56
1897	2.91	4.47	4.91	0.12	0.71	0.25	0.00	0.02	0.09	2.13	1.20	1.54	18.35
1898	1.78	2.64	0.47	0.12	1.17	0.25	0.00	0.02	1.00	0.72	0.63	1.61	10.41
1899	4.93	0.18	7.86	1.05	0.86	0.02	0.00	0.00	0.00	3.19	3.58	3.41	25.08
1900	4.57	0.96	2.23	1.44	0.14	0.00	0.00	0.06	0.59	1.26	3.49	1.37	16.11
Mean (8 years)	4.44	2.00	3.15	1.12	0.80	0.14	0.01	0.06	0.57	1.33	2.56	2.98	19.10

POINT REYES LIGHT.

[Elevation, 650 feet.]

1892	4.68	4.37	3.36	2.26	2.97	0.36	0.45	0.27	0.68	1.54	3.22	4.72	28.88
1893	3.21	2.58	8.09	1.83	0.91	0.08	0.02	0.00	0.69	0.54	5.43	3.49	26.87
1894	8.26	2.39	2.06	0.66	2.31	1.16	0.00	0.00	2.64	2.42	1.04	9.50	32.44
1895	9.43	1.34	2.63	1.02	1.29	0.02	0.40	T.	1.72	0.42	2.52	2.27	23.06
1896	8.30	0.97	3.25	4.20	1.24	0.00	0.00	0.02	0.43	1.76	4.85	5.40	30.42
1897	2.74	4.93	5.87	0.47	0.02	0.42	0.00	0.00	0.47	2.81	1.99	1.83	21.55
1898	1.60	4.48	0.47	0.29	2.82	0.42	0.00	T.	0.80	1.27	1.00	0.85	14.00
1899	7.11	0.53	5.56	0.86	2.02	0.18	0.00	0.91	0.00	5.41	6.43	3.70	32.71
1900	6.46	0.99	2.45	2.51	0.17	0.02	0.00	0.00	0.87	2.72	4.16	1.93	22.28
Mean (9 years)	5.75	2.51	3.75	1.57	1.53	0.30	0.10	0.13	0.92	2.10	3.40	3.74	25.80

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

POMONA (NEAR), LOS ANGELES COUNTY.

[Elevation, 860 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1894	2.36	0.82	0.65	0.08	0.36	0.00	0.00	0.00	0.44	0.04	0.00	8.48	13.23
1895	8.74	1.39	3.56	0.66	0.00	0.00	0.00	0.00	0.00	0.08	1.08	0.66	16.16
1896	2.42	0.00	4.39	0.15	0.00	0.00	0.09	0.00	0.00	1.45	1.19	1.57	11.26
1897	5.54	6.16	3.34	T.	T.	0.00	0.00	0.00	0.22	1.26	0.51	0.96	17.99
1898	2.13	0.81	1.22	0.06	2.22	0.00	0.00	0.00	0.00	0.09	0.08	0.51	7.12
1899	2.79	0.04	2.10	0.10	0.00	0.73	0.00	0.00	0.00	1.92	1.39	0.95	10.02
1900	1.80	0.05	1.02	0.95	2.00	0.00	0.00	0.00	0.00	0.34	8.38	0.00	14.04
Mean (7 years)	3.61	1.32	2.33	0.29	0.65	0.10	0.01	0.00	0.09	0.74	1.80	1.88	12.83

PORTERVILLE, TULARE COUNTY.

[Elevation, 461 feet.]

1889	0.82	0.18	1.26	0.42	0.89	T.	0.00	T.	0.00	8.41	0.45	3.23	10.66
1890	3.43	0.49	1.30	0.12	0.20	0.00	0.00	0.15	0.00	0.00	0.40	2.78	8.87
1891	0.36	2.43	0.71	1.14	0.29	0.00	0.00	0.00	0.01	0.00	0.36	3.38	8.68
1892	0.26	1.33	2.21	0.16	0.65	0.22	0.00	0.00	0.00	0.17	0.54	2.43	7.97
1893	0.43	1.85	3.68	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.61	7.31
1894	1.52	0.83	0.71	0.32	0.42	1.09	0.00	0.00	0.43	0.15	0.04	3.13	8.64
1895	3.82	1.54	1.10	0.41	0.35	0.00	0.00	0.00	T.	0.23	1.71	0.51	9.67
1896	1.61	T.	0.67	1.13	0.13	0.00	0.69	0.00	T.	0.65	0.94	0.98	6.75
1897	1.96	2.46	2.00	0.30	0.42	0.00	0.00	0.00	0.00	1.19	0.50	0.89	9.72
1898	0.75	1.55	0.08	T.	0.55	0.00	0.00	0.00	2.10	T.	0.27	0.35	5.65
1899	1.01	0.17	2.02	0.19	0.10	0.85	0.00	T.	0.00	1.08	0.88	0.91	7.21
1900	0.97	0.16	0.89	1.94	2.41	0.00	T.	0.00	T.	0.04	3.44	0.30	10.15
Mean (12 years)	1.44	1.08	1.39	0.53	0.53	0.18	0.06	0.01	0.21	0.58	0.80	1.62	8.44

POWAY, SAN DIEGO COUNTY.

[Elevation, 460 feet.]

1879	2.88	1.50	0.00	1.30	0.08	0.20	0.00	0.00	0.00	0.30	2.75	4.72	13.73
1880	1.13	1.54	1.76	3.10	0.09	0.00	0.06	0.16	T.	0.74	0.30	3.56	12.44
1881	1.16	0.60	2.86	1.14	0.03	0.00	0.00	0.04	0.03	1.17	0.20	0.73	7.96
1882	6.40	2.69	1.13	0.84	0.04	0.09	0.00	0.01	0.04	0.29	0.60	0.27	12.40
1883	0.88	1.76	1.87	1.36	1.34	0.00	0.00	T.	0.00	1.59	0.00	2.40	11.20
1884	1.59	9.40	6.96	4.81	2.26	0.44	0.00	T.	T.	0.24	0.38	5.91	31.99
1885	0.72	0.35	0.34	2.05	0.68	0.07	0.00	T.	0.00	0.06	2.71	0.90	7.83
1886	6.34	0.77	3.24	2.78	0.00	0.00	T.	0.02	0.00	0.10	1.50	0.20	14.95
1887	0.09	4.87	0.34	2.01	0.34	0.00	0.00	T.	0.63	0.00	2.04	2.70	13.02
1893	1.78	2.42	8.26	0.51	0.00	T.	0.00	0.00	0.06	0.19	1.86	2.49	17.07
1894	0.79	1.29	1.64	0.14	0.21	0.15	0.00	0.06	T.	T.	0.00	3.06	7.34
1895	12.65	1.08	1.24	0.46	0.26	0.00	0.00	T.	0.00	0.25	1.44	0.57	17.95
1896	2.50	T.	4.73	0.96	0.31	0.00	T.	0.08	0.00	1.51	1.54	2.42	14.05
1897	4.30	4.91	2.89	0.00	0.12	0.00	0.00	0.00	0.02	1.70	0.08	0.72	14.74
1898	2.78	0.22	1.75	0.33	1.55	0.00	0.00	T.	0.05	0.00	0.29	1.87	8.84
1899	2.98	0.61	1.16	0.05	0.44	0.51	0.00	0.00	0.00	0.78	1.29	1.29	9.11
1900	3.89	0.32	0.69	1.48	1.48	0.05	0.00	0.00	T.	0.25	3.19	0.00	11.35
Mean (17 years)	3.11	2.02	2.40	1.37	0.54	0.09	T.	0.02	0.05	0.54	1.16	1.99	13.29

QUINCY, PLUMAS COUNTY.

[Elevation, 3,400 feet.]

1895	[8.38]	[4.96]	[6.43]	2.09	3.86	0.00	0.87	0.35	6.27	0.44	1.58	5.07	39.75
1896	20.79	0.65	7.96	11.03	4.39	0.00	0.06	0.20	1.43	1.05	11.26	6.36	65.18
1897	2.77	8.31	8.53	0.99	0.00	1.60	0.00	T.	0.63	3.01	6.13	3.97	35.94
1898	1.21	10.08	0.20	1.01	3.97	1.84	0.13	T.	0.08	1.73	2.47	1.56	24.28
1899	8.75	0.82	9.02	1.36	2.28	0.13	0.00	1.09	0.00	11.88	9.13	7.60	52.06
1900	6.21	1.87	7.79	3.54	0.98	0.25	T.	T.	0.04	7.33	8.42	4.70	41.63
Mean (6 years)	8.10	4.45	6.66	3.34	2.58	0.64	0.09	0.27	1.41	4.24	6.49	4.88	43.14

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

REDDING, SHASTA COUNTY.

[Elevation, 552 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1875	6.21	0.16	1.41	0.01	0.14	0.24	0.00	0.00	0.00	2.11	13.31	9.13	32.72
1876	11.26	7.97	8.85	1.77	2.90	0.70	0.63	0.65	1.20	5.60	0.40	0.00	41.95
1877	6.59	3.78	4.43	0.57	1.41	0.75	0.00	0.07	0.00	1.63	7.26	4.41	30.90
1878	22.69	13.78	7.20	1.66	0.74	0.05	0.00	0.00	1.32	2.15	2.59	0.59	52.77
1879	4.20	4.81	10.54	6.82	3.56	0.48	0.03	0.11	0.00	0.75	5.96	10.85	48.11
1880	4.02	2.21	1.62	9.73	1.32	0.00	0.00	0.00	0.00	0.10	0.13	18.39	37.52
1881	14.64	9.09	0.99	5.63	0.71	1.09	0.00	0.05	1.12	4.05	1.50	6.07	44.94
1882	3.02	3.36	4.23	1.67	0.37	0.00	0.00	0.00	0.00	3.62	4.67	2.05	22.99
1883	1.78	0.36	3.71	1.56	4.26	0.00	0.00	0.00	1.00	4.09	0.67	0.75	18.18
1884	5.45	3.94	8.20	3.05	T.	1.64	0.00	0.00	0.02	1.36	0.00	14.51	38.17
1885	2.32	1.28	0.00	3.63	0.00	1.23	0.00	0.00	T.	0.00	11.90	9.00	29.36
1886	10.30	T.	2.90	8.41	2.32	0.00	0.00	0.00	0.00	0.98	0.13	5.34	30.38
1887	2.50	8.35	1.20	3.65	1.25	0.95	0.00	0.00	0.15	0.00	1.60	4.10	23.75
1888	9.35	2.70	2.95	0.00	0.73	3.52	0.00	0.00	0.45	0.00	[3.68]	7.33	30.71
1889	[6.34]	0.09	10.78	2.33	3.90	0.96	0.00	0.00	0.00	15.13	5.07	17.66	[62.26]
1890	10.80	6.76	7.77	3.12	2.24	0.00	0.00	0.00	1.57	0.00	0.00	3.56	35.82
1891	1.68	9.95	3.05	2.31	3.17	1.91	0.75	0.00	0.13	0.02	0.06	8.36	31.41
1892	4.08	3.52	3.96	4.27	4.44	0.10	0.03	0.00	0.04	2.10	6.30	10.79	39.63
1893	4.16	3.90	12.16	4.19	1.86	0.00	T.	0.00	2.36	0.39	8.33	4.16	41.51
1894	9.78	5.36	2.89	1.84	2.45	0.95	T.	0.74	1.32	4.15	1.01	12.22	42.71
1895	12.84	3.08	2.78	0.99	2.61	0.00	0.95	T.	3.24	0.01	2.12	4.36	32.98
1896	14.52	0.79	4.17	4.05	8.97	0.35	T.	0.38	0.81	1.99	6.30	8.98	51.31
1897	4.42	6.80	5.29	3.02	0.00	1.59	T.	0.00	0.15	1.36	1.69	3.60	27.92
1898	0.54	3.77	0.00	0.76	3.64	0.15	0.00	T.	0.13	1.56	2.23	1.78	14.56
1899	9.66	1.04	8.86	0.61	0.82	2.46	0.00	0.08	0.00	4.83	8.50	4.18	41.04
1900	6.45	2.86	3.68	2.59	3.12	1.38	T.	0.16	2.48	6.47	3.03	3.14	35.36
Mean (26 years)	7.29	4.22	4.75	3.01	2.19	0.79	0.09	0.09	0.67	2.48	3.79	6.74	36.11

REPRESSA, SACRAMENTO COUNTY.

[Elevation, 305 feet.]

1893	[6.06]	[4.34]	7.40	2.00	1.28	0.00	0.00	0.00	0.70	0.26	3.81	2.35	[28.20]
1894	4.71	5.53	0.65	0.56	2.80	1.10	0.00	0.00	0.65	2.75	0.90	12.56	32.21
1895	11.36	2.64	2.50	2.26	1.83	0.00	0.00	T.	1.45	0.07	1.98	1.95	26.04
1896	9.07	0.22	4.46	6.54	1.62	0.00	0.00	0.55	0.35	0.82	5.86	1.80	31.29
1897	4.38	8.99	4.95	0.71	0.35	T.	0.00	0.18	0.10	2.61	1.11	2.04	25.42
1898	0.79	4.31	0.30	0.45	1.53	0.35	0.00	0.00	0.24	0.88	1.87	2.62	13.34
1899	5.41	0.04	7.88	0.74	1.12	0.43	0.00	0.04	0.00	6.39	5.52	4.39	31.96
1900	5.00	1.16	2.73	3.12	1.72	T.	0.00	0.00	0.25	2.26	4.87	1.63	22.24
Mean (8 years)	5.85	3.40	3.86	2.05	1.53	0.24	0.00	0.10	0.47	2.00	3.18	3.67	26.34

RIO VISTA, SOLANO COUNTY.

[Elevation, 28 feet.]

1893	3.15	2.31	3.31	0.99	0.61	0.00	0.00	0.00	0.14	0.09	2.66	2.00	15.26
1894	5.61	4.56	0.65	0.35	1.23	0.98	0.03	T.	1.28	1.91	0.53	8.36	25.49
1895	7.96	2.60	1.00	0.91	0.84	0.00	0.00	T.	1.18	0.19	1.82	1.17	17.67
1896	9.01	0.22	1.42	4.51	0.67	0.00	T.	0.21	0.53	1.44	3.12	1.96	23.09
1897	2.49	3.99	4.31	0.21	T.	0.05	0.00	0.01	0.11	1.79	0.80	1.24	14.50
1898	1.26	1.89	0.29	0.28	1.55	0.06	0.00	0.00	0.17	0.70	0.45	1.47	8.12
1899	4.21	0.00	6.94	0.28	0.13	0.90	0.00	T.	0.00	4.47	2.77	1.87	21.57
1900	3.02	0.42	1.46	0.94	1.39	0.10	T.	0.00	0.01	1.59	4.77	1.35	15.05
Mean (8 years)	4.59	2.00	2.42	1.06	0.80	0.26	T.	0.03	0.43	1.52	2.05	2.43	17.59

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

ROSEWOOD, TEHAMA COUNTY.

[Elevation, 865 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1894	5.80	2.30	2.40	2.00	3.20	0.88	0.01	T.	1.64	1.42	0.79	12.63	33.07
1895	11.93	2.34	2.27	1.26	0.42	0.00	0.45	T.	0.81	0.97	1.70	3.25	25.40
1896	13.60	0.30	3.85	4.58	3.15	0.02	0.17	0.16	1.08	[1.05]	3.68	7.46	[39.10]
1897	4.49	4.64	2.17	0.42	0.01	1.77	T.	T.	0.08	1.28	1.16	2.11	18.08
1898	0.91	3.80	0.16	0.40	2.79	0.26	0.00	0.01	0.26	0.58	1.59	1.78	12.49
1899	9.50	0.30	6.09	0.90	2.09	0.02	0.00	T.	0.00	2.30	5.29	3.93	30.43
1900	2.98	1.91	2.37	2.42	2.60	0.70	0.00	0.08	0.59	3.46	2.71	2.77	22.59
Mean (— years)	7.08	2.23	2.76	1.71	2.04	0.52	0.09	0.04	0.63	1.57	2.42	4.85	25.88

SAN ARDO, MONTEREY COUNTY.

[Elevotion, 236 feet.]

1887	0.58	5.58	0.17	0.76	0.05	0.26	0.00	0.00	0.14	0.37	0.32	2.07	10.30
1888	3.44	0.28	2.91	0.11	0.27	0.00	0.00	0.00	0.00	0.00	3.24	2.31	12.56
1889	0.83	0.80	6.16	0.49	0.27	0.00	0.00	0.00	0.00	4.74	2.96	7.16	23.41
1890	3.36	3.59	0.99	0.00	0.43	0.00	0.00	0.04	1.10	0.00	0.11	1.41	11.03
1891	0.43	3.99	0.76	1.04	0.03	0.00	0.00	0.00	0.14	0.00	0.00	1.57	7.96
1892	0.58	0.48	1.37	0.08	1.61	0.00	0.00	0.00	0.00	0.15	1.80	3.40	9.47
1893	1.55	1.31	3.94	0.62	0.15	0.00	0.00	0.00	0.00	0.00	0.21	1.06	8.84
1894	1.18	0.34	0.13	0.10	0.68	0.15	0.00	0.00	0.65	0.25	0.02	4.42	7.92
1895	3.98	0.23	0.94	0.41	0.02	0.00	0.00	0.00	0.00	1.48	2.86	0.30	10.22
1896	5.10	0.00	2.11	2.27	0.25	0.00	0.00	0.22	0.00	0.45	2.73	1.54	14.67
1897	0.89	1.18	2.19	0.06	0.00	0.00	0.00	0.22	0.00	0.78	0.05	0.42	5.79
1898	0.38	0.89	0.70	0.00	0.43	0.00	0.00	T.	T.	0.13	0.20	0.15	2.88
1899	3.24	0.03	2.81	0.84	T.	T.	0.00	T.	0.00	1.65	0.96	1.09	10.62
1900	1.68	0.15	1.15	0.39	0.66	T.	T.	0.00	T.	0.88	4.30	0.08	9.29
Mean (14 years)	1.94	1.35	1.88	0.51	0.35	0.03	T.	0.03	0.14	0.78	1.41	1.93	10.35

SANGER JUNCTION, FRESNO COUNTY.

[Elevation, 371 feet.]

1889	0.47	0.54	2.95	0.84	0.80	0.00	0.00	T.	0.00	4.39	1.31	4.71	16.00
1890	4.02	1.48	1.22	0.11	0.00	0.00	0.00	0.00	0.11	0.00	0.04	2.87	9.35
1891	0.55	2.41	0.45	0.30	0.00	0.00	0.00	0.00	0.10	0.00	0.40	3.26	7.47
1892	0.74	0.85	2.57	0.46	1.30	0.00	0.00	0.00	0.00	0.00	0.93	1.23	8.08
1893	1.15	2.15	3.14	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.17	8.92
1894	2.14	2.46	0.56	0.21	0.60	1.55	0.00	0.00	0.38	0.42	0.40	4.38	13.10
1895	4.14	2.16	2.37	0.74	0.59	0.00	0.00	0.00	0.06	0.20	0.61	0.89	11.76
1896	4.75	0.00	1.46	1.13	0.00	0.00	0.00	0.33	0.00	1.25	1.27	0.97	11.16
1897	1.94	3.97	2.32	0.46	0.00	0.00	0.00	0.00	0.00	2.22	0.55	0.66	12.12
1898	0.66	1.01	0.79	T.	0.77	0.00	0.00	0.00	1.44	0.03	0.23	0.33	5.26
1899	2.01	0.16	4.14	0.35	0.00	0.60	0.00	0.00	0.00	2.79	2.08	0.65	12.78
1900	2.05	0.09	1.01	0.97	1.64	0.00	0.00	0.00	0.00	0.37	5.89	0.33	12.35
Mean (12 years)	2.05	1.44	1.94	0.47	0.48	0.18	0.00	0.03	0.17	0.97	1.14	1.83	10.70

SAN LEANDRO, ALAMEDA COUNTY.

[Elevation, 50 feet.]

1895	8.21	2.69	2.06	1.96	0.82	0.00	0.08	0.00	0.63	0.26	2.31	2.25	21.27
1896	9.84	0.25	2.03	5.86	0.91	0.00	0.04	1.34	0.89	1.41	5.78	2.89	31.24
1897	3.13	5.79	6.03	0.50	0.12	0.22	0.00	0.00	0.10	2.67	1.21	2.43	22.20
1898	1.33	2.66	0.39	0.38	1.44	0.36	0.00	0.00	1.13	1.43	0.96	1.58	11.66
1899	3.68	0.20	10.85	0.82	1.18	0.21	0.00	T.	0.00	4.38	4.76	2.76	28.84
1900	3.93	1.24	2.63	1.88	0.58	0.00	0.00	0.00	0.04	1.78	5.09	1.91	19.08
Mean (6 years)	5.02	2.14	4.00	1.96	0.84	0.13	0.02	0.22	0.46	1.99	3.35	2.30	22.38

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

SAN MIGUEL, SAN LUIS OBISPO.

[Elevation, 616 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1887	0.52	5.96	0.12	1.40	0.24	0.26	0.00	0.00	0.58	0.37	0.49	2.84	12.78
1888	4.06	0.13	2.34	0.00	0.22	0.00	0.00	0.00	0.00	0.00	2.44	2.11	11.30
1889	0.80	0.85	4.10	0.32	0.67	0.00	0.00	0.00	0.00	3.90	1.60	6.72	18.96
1890	3.79	3.13	0.81	0.00	0.18	0.00	0.00	0.00	0.67	0.00	0.01	[2.50]	11.09
1891	0.42	5.20	2.67	0.69	0.00	0.00	0.00	0.00	0.35	0.00	0.00	2.21	11.54
1892	0.26	0.97	2.80	0.06	1.25	0.02	0.00	0.00	0.00	0.40	2.41	3.27	10.94
1893	1.37	1.31	3.99	0.79	0.09	0.00	0.00	0.00	0.00	0.14	0.30	2.09	10.08
1894	0.90	0.41	0.13	0.06	0.00	0.00	0.00	0.00	0.47	0.69	0.21	5.21	8.08
1895	4.22	0.33	1.10	0.47	0.09	0.00	0.00	0.00	0.00	0.56	1.05	0.56	8.38
1896	3.57	0.00	3.11	1.35	0.24	0.00	0.00	0.68	0.10	0.67	1.49	1.89	13.10
1897	1.14	3.62	1.78	0.13	0.00	0.00	0.00	0.00	0.04	0.27	0.03	0.27	7.28
1898	0.25	1.17	0.93	0.00	0.51	0.00	0.00	0.00	0.02	0.03	0.19	0.36	3.46
1899	3.09	0.26	3.04	0.99	0.00	0.17	0.00	0.00	0.00	2.35	0.87	1.23	12.00
1900	1.69	0.07	1.63	0.44	0.45	0.00	0.00	0.00	0.00	0.60	4.45	0.12	9.45
Mean (14 years)	1.86	1.67	2.00	0.48	0.28	0.03	0.00	0.05	0.16	0.71	1.11	2.24	10.60

SAN MIGUEL ISLAND, SANTA BARBARA COUNTY.

[Elevation, 500 feet.]

1894	[3.90]	[1.07]	0.40	0.34	0.34	0.11	T.	0.00	0.79	0.11	0.30	4.80	12.16
1895	4.10	0.63	2.12	0.10	0.05	0.00	0.00	0.00	0.00	1.27	0.40	0.48	9.15
1896	5.37	0.00	2.25	0.93	0.90	0.00	0.16	0.10	0.21	0.60	2.52	1.36	14.40
1897	4.28	3.57	1.63	0.04	0.08	0.00	0.00	0.00	0.18	0.76	0.00	0.14	10.68
1898	1.84	0.09	0.39	0.02	0.71	0.70	0.14	0.04	2.70	0.23	0.20	1.16	8.22
1899	4.25	0.35	1.89	1.33	[0.41]	2.00	0.00	0.00	0.00	1.40	1.56	[1.35]	14.54
1900	1.76	0.24	0.75	0.75	0.44	0.00	0.00	0.00	0.00	0.24	1.70	0.17	6.05
Means (7 years)	3.64	0.85	1.35	0.50	0.41	0.40	0.04	0.02	0.55	0.66	0.95	1.35	10.94

SANTA ANA, ORANGE COUNTY.

[Elevation, 137 feet.]

1889	0.31	2.07	4.65	0.66	0.45	0.00	0.00	0.66	0.00	1.88	0.36	12.09	23.13
1890	4.75	1.66	3.22	0.00	0.35	0.00	0.00	0.00	0.25	0.00	0.30	2.35	12.88
1891	0.20	8.70	0.69	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	11.62
1892	1.23	2.26	0.86	0.25	1.92	0.00	0.00	0.00	0.00	0.16	1.14	1.46	9.28
1893	2.50	2.46	5.93	0.30	0.00	0.00	0.00	0.00	0.00	2.14	0.41	2.20	15.94
1894	0.50	0.50	0.63	0.10	0.13	0.00	0.00	0.00	0.22	0.00	0.00	4.98	7.06
1895	7.10	0.90	2.96	0.60	0.10	0.00	0.00	0.00	0.00	0.00	0.80	0.70	13.16
1896	3.43	0.00	2.90	[0.25]	0.00	0.00	0.00	0.00	0.00	1.88	1.45	2.27	11.68
1897	2.19	4.71	2.15	0.00	0.13	0.00	0.00	0.00	0.00	1.30	0.00	0.00	10.48
1898	0.91	1.39	0.90	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.50	4.07
1899	3.25	0.20	1.24	0.25	0.00	0.55	0.00	0.00	0.42	1.90	0.68	1.20	9.69
1900	1.67	0.20	0.77	1.02	1.00	0.00	0.00	0.00	0.00	0.15	8.72	0.00	8.53
Means (12 years)	2.34	2.09	2.24	0.32	0.37	0.05	0.00	0.06	0.07	0.74	0.74	2.45	11.46

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

SANTA CLARA, SANTA CLARA COUNTY.

[Elevation, 88 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1881	2.69	2.33	0.88	1.08	0.00	0.30	0.00	0.00	0.00	0.18	1.12	1.77	10.35
1882	1.25	1.50	4.96	1.15	0.25	0.00	0.00	0.00	0.12	1.18	1.29	1.68	13.38
1883	0.55	0.72	2.74	0.60	2.37	0.00	0.00	0.00	0.05	0.70	0.48	0.70	8.19
1884	4.10	3.99	5.80	2.90	0.00	1.65	0.00	0.05	0.00	1.88	0.05	4.32	24.74
1885	1.45	0.25	0.65	1.77	0.00	0.00	0.00	0.00	0.01	0.06	7.58	3.03	14.80
1886	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1887	3.56	6.94	0.70	1.22	0.00	0.00	0.00	0.00	0.41	0.40	0.69	2.45	16.37
1888	3.08	1.68	3.10	0.12	1.28	0.18	0.00	0.00	0.58	0.00	4.37	3.00	17.39
1889	0.58	0.48	5.82	0.74	0.91	0.01	0.00	0.00	0.00	4.84	2.01	10.78	26.21
1890	7.02	3.35	1.99	0.47	0.73	0.00	0.00	0.00	0.10	0.00	0.07	2.07	15.80
1891	0.46	6.55	2.16	2.43	0.17	0.05	0.00	0.00	0.25	0.00	0.43	5.39	17.89
1892	0.94	1.44	3.42	0.54	1.62	0.06	0.00	0.00	0.00	1.19	4.12	7.75	21.08
1893	3.07	2.83	4.79	1.46	0.38	0.02	0.00	0.00	T.	0.04	0.83	1.16	15.03
1894	4.64	2.16	0.45	0.49	1.10	0.38	T.	T.	0.99	2.07	0.55	7.58	20.41
1895	5.93	1.24	2.03	1.94	0.98	0.00	0.00	0.00	0.15	0.49	1.17	0.77	14.70
1896	6.02	0.20	2.08	2.72	0.32	0.00	0.00	0.69	0.19	1.47	3.13	2.69	19.51
1897	1.20	3.94	3.51	0.15	0.05	0.00	0.00	0.00	0.08	1.04	0.56	1.29	11.82
1898	1.28	2.12	0.60	0.16	0.65	0.08	0.00	0.00	1.34	0.68	0.36	0.86	8.13
1899	2.68	0.27	4.02	0.51	0.19	0.38	0.00	0.00	0.00	3.69	2.23	1.59	15.56
1900	2.54	0.49	1.10	1.09	0.77	0.05	0.00	0.00	0.21	1.02	4.50	1.38	13.15
Means (19 years)	2.79	2.24	2.67	1.18	0.62	0.17	T.	0.04	0.24	1.10	1.87	3.20	16.06

SANTA MARGARITA, SAN LUIS OBISPO COUNTY.

[Elevation, 996 feet.]

1889	[5.27]	0.11	8.87	0.03	2.14	0.00	0.00	0.00	0.00	10.85	3.20	15.68	46.15
1890	8.53	7.72	3.49	0.00	0.32	0.00	0.00	0.00	0.85	0.00	0.00	5.68	26.59
1891	0.97	10.96	3.18	1.80	0.33	0.00	0.00	0.00	0.71	0.00	0.06	8.21	26.22
1892	1.54	2.19	4.49	0.67	2.65	0.00	0.00	0.00	0.00	0.30	7.40	8.15	27.39
1893	4.50	9.05	10.60	1.68	0.00	0.00	0.00	0.00	0.00	0.70	0.00	2.60	29.13
1894	2.99	3.21	0.50	0.85	2.10	0.00	0.00	0.00	2.22	0.73	0.33	10.82	23.75
1895	13.57	2.16	2.66	1.52	0.57	0.00	0.00	0.00	T.	1.05	2.25	0.77	24.55
1896	11.18	0.10	5.07	5.25	0.20	0.00	0.18	0.19	0.00	2.00	2.85	4.08	31.10
1897	3.07	8.08	6.60	0.20	0.00	0.00	0.00	0.00	0.00	0.90	0.05	0.78	19.68
1898	1.11	2.94	1.13	0.00	1.53	0.00	0.00	0.00	0.18	0.18	0.05	0.55	7.67
1899	5.62	0.26	9.70	1.79	0.00	0.86	0.00	0.00	0.00	4.19	2.15	3.90	28.47
1900	3.27	0.02	4.00	1.25	0.84	0.00	0.00	0.00	0.12	1.50	13.54	0.68	25.22
Means (12 years)	5.14	3.90	5.02	1.25	0.89	0.07	0.02	0.02	0.34	1.87	2.67	5.16	26.33

SANTA MARIA, SANTA BARBARA COUNTY.

[Elevation, 220 feet.]

1886	1.83	0.97	2.55	3.37	0.00	0.00	0.00	0.00	0.00	0.06	0.59	0.72	10.09
1887	0.50	5.95	0.25	1.07	0.22	T.	0.00	0.00	0.30	0.40	1.09	2.69	12.47
1888	4.62	0.43	1.98	0.12	0.14	T.	T.	0.00	T.	0.00	2.59	5.86	15.74
1889	0.42	1.35	4.20	0.97	0.60	0.05	0.00	0.00	0.00	7.53	1.80	6.71	23.63
1890	7.02	3.64	0.88	0.10	0 13	0.00	0.06	0.00	0.55	0.70	0.70	3.40	17.18
1891	0.63	3.57	0.71	1.58	0.20	0.00	0.00	0.00	0.03	0.00	0.33	2.77	9.82
1892	0.56	2.18	2.36	0.45	1.15	T.	0.00	0.00	0.00	0.35	1.95	2.52	11.52
1893	2.08	3.10	6.84	0.80	9 05	0.00	0.00	0.00	9.00	0.65	0.22	2.95	16.69
1894	1.16	1.78	0.62	0.25	0.73	0.16	0.06	T.	1.05	0.68	0.07	3.86	10.42
1895	4.43	1.22	1.25	0.53	0.51	0.00	T.	0.00	0.01	0.65	1.26	0.60	10.46
1896	4.60	0.00	2.59	1.77	0.03	0.00	0.11	0.03	0.02	0.60	1.82	2.34	13.91
1897	3.55	4.00	2.52	0.14	0.01	0.00	0.03	0.00	0.10	0.67	0.03	0.55	11.60
1898	1.44	1.06	0.65	0.02	1.14	0.00	0.00	0.00	0.96	0.30	0.05	0.64	6.26
1899	3.49	0.46	4.88	0.99	0.75	0.00	0.00	0.00	0.00	1.86	1.21	0.89	14.53
1900	0.87	0.05	1.41	0.97	1.97	T.	T.	T.	T.	0.65	5.40	0.35	11.67
Means (15 years)	2.48	1.98	2.25	0.88	0.51	0.01	0.02	T.	0.20	1.01	1.27	2.46	13.07

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

SANTA PAULA, MONTEREY COUNTY.

[Elevation, 286 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	0.65	1.02	9.00	0.36	0.30	0.00	0.00	0.01	0.00	6.28	1.81	16.45	35.88
1890	5.40	2.00	0.47	0.05	0.00	0.00	0.00	0.00	0.72	0.00	0.34	2.53	11.51
1891	0.48	8.73	2.40	0.82	0.13	0.00	0.00	0.00	0.19	0.00	0.00	1.54	14.29
1892	0.70	3.99	3.24	0.54	1.80	0.00	0.00	0.00	0.00	[1.08]	0.00	6.58	17.93
1893	4.60	2.81	6.81	0.40	0.00	0.00	0.00	0.00	0.00	0.87	0.00	3.64	19.13
1894	1.04	0.00	0.00	0.23	0.46	0.00	0.10	0.00	0.98	0.30	0.00	5.45	8.56
1895	6.90	0.60	3.13	0.30	0.00	0.00	0.00	0.00	0.00	0.14	0.90	0.85	12.82
1896	5.66	0.00	3.18	1.00	0.00	0.00	0.00	0.10	0.00	0.97	1.43	3.13	15.47
1897	5.31	4.98	3.24	0.00	0.00	0.00	0.00	0.00	0.45	1.07	0.00	0.00	15.05
1898	0.92	0.70	1.55	0.00	1.10	0.00	0.00	0.00	0.86	0.08	T.	0.27	5.48
1899	3.44	0.00	2.41	0.35	0.00	0.59	0.00	0.00	0.00	1.84	1.17	1.66	11.46
1900	1.67	0.00	1.36	0.38	1.49	0.00	0.00	T.	0.00	0.07	4.71	T.	9.68
Means (12 years)	3.06	2.07	3.07	0.37	0.44	0.05	0.01	0.01	0.27	1.06	0.86	3.51	14.77

SANTA ROSA, SONOMA COUNTY.

[Elevation, 181 feet.]

1889	1.77	0.35	7.92	1.09	2.93	0.25	0.00	0.00	0.00	8.78	4.39	15.94	43.42
1890	12.84	4.74	6.15	1.82	1.40	0.00	0.00	0.00	0.20	0.00	0.00	3.93	31.08
1891	1.25	10.49	1.22	2.39	1.23	0.00	0.75	0.00	0.20	0.20	1.50	8.64	27.87
1892	3.43	5.07	4.14	2.65	3.78	0.00	0.00	0.00	0.00	1.44	3.37	6.55	30.43
1893	4.13	5.56	6.59	2.07	0.80	0.00	0.00	0.00	0.25	0.52	4.82	2.61	27.35
1894	9.61	3.78	1.31	1.08	1.84	1.30	0.00	0.00	1.50	2.55	0.89	13.41	37.00
1895	18.42	3.35	2.94	1.35	1.39	0.00	0.33	0.00	[0.37]	0.00	1.83	2.95	32.93
1896	10.57	0.69	3.53	4.70	1.45	0.00	0.00	0.00	0.46	1.50	5.09	6.42	34.41
1897	2.27	6.25	5.50	1.03	0.57	0.33	0.00	0.00	0.10	1.88	2.18	[6.82]	27.43
1898	1.81	5.32	0.66	0.38	3.32	0.17	0.00	0.00	0.62	1.07	1.16	1.20	15.71
1899	8.77	0.00	8.57	0.67	2.09	0.00	0.00	0.15	0.00	5.94	5.44	4.78	36.41
1900	4.98	0.77	3.72	2.83	0.60	0.16	0.00	0.00	0.00	4.41	5.60	3.35	26.42
Means (12 years)	6.65	3.86	4.35	1.84	1.78	0.23	0.09	0.01	0.31	2.36	3.02	6.36	30.87

SELMA.

[Elevation, 311 feet.]

1886	1.97	0.36	0.96	1.98	0.00	0.00	0.00	0.00	0.00	0.27	0.59	0.60	6.73
1887	0.31	2.84	0.00	2.60	0.58	0.00	0.00	0.00	0.00	0.20	0.16	0.97	7.66
1888	2.40	T.	1.57	0.10	0.31	0.00	0.00	0.00	0.10	0.00	1.46	1.88	7.82
1889	0.36	0.53	1.85	0.47	0.70	0.00	0.00	0.00	0.00	3.60	1.09	3.98	12.58
1890	2.19	0.94	1.19	0.25	1.19	0.00	0.00	0.00	0.95	0.00	0.50	1.89	9.10
1891	0.48	2.20	0.47	0.47	0.00	0.00	0.00	0.00	0.07	0.00	0.45	2.63	6.77
1892	0.31	1.27	1.57	0.80	0.38	0.00	0.00	0.00	0.00	0.45	0.80	1.17	6.75
1893	1.08	1.60	3.32	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.01	1.58	7.82
1894	1.51	1.21	0.40	0.08	0.22	0.90	0.00	0.00	0.40	0.35	0.05	3.35	8.47
1895	3.53	1.42	1.15	0.40	0.30	0.00	0.00	0.00	0.00	0.00	1.00	0.55	8.35
1896	2.52	0.00	1.15	1.13	0.32	0.00	0.00	0.05	0.00	1.00	2.35	0.75	9.27
1897	1.49	[1.11]	1.56	0.47	0.00	0.00	0.00	0.00	0.00	1.15	0.14	0.47	6.39
1898	0.27	0.93	0.30	0.00	0.70	0.00	0.00	0.00	1.33	T.	0.10	0.28	3.91
1899	1.75	T.	3.27	0.18	0.00	0.00	0.00	0.00	0.00	2.70	0.92	0.85	9.67
1900	1.81	0.00	0.90	0.95	1.21	0.00	0.00	0.00	0.00	T.	3.54	0.39	8.80
Mean (15 years)	1.47	0.96	1.31	0.67	0.39	0.06	0.00	T.	0.19	0.65	0.88	1.42	8.01

SHASTA, SHASTA COUNTY.

[Elevation, 1,148 feet.]

1896	27.67	0.69	6.93	12.27	9.17	0.27	0.00	0.43	1.06	3.92	10.17	13.10	85.68
1897	6.95	9.39	7.18	0.78	0.01	2.23	0.00	0.00	0.07	2.66	2.20	4.81	36.28
1898	0.84	8.39	T.	0.56	6.22	0.12	0.00	T.	T.	0.67	2.89	2.15	21.34
1899	12.42	1.20	10.15	1.41	2.34	1.96	0.00	0.06	0.00	5.39	11.29	6.38	52.60
1900	6.69	3.99	6.81	7.47	3.00	1.85	T.	0.21	3.43	8.91	5.82	7.45	55.63
1901	13.65	8.43	1.46	5.51	0.39	0.00	.....	.....	.....	.....	.....	.....	.....
Mean (6 years)	11.29	5.35	5.42	4.67	3.52	1.07	.....	.....	.....	.....	.....	.....	.....

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

SIERRA MADRE, LOS ANGELES COUNTY.

[Elevation, 1,400 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1897	4.48	8.60	4.08	0.10	0.45	0.06	0.06	0.00	0.42	3.46	0.32	0.69	22.72
1898	1.63	0.41	1.23	0.90	2.42	0.00	0.00	0.00	T.	T.	T.	1.63	8.22
1899	3.21	0.12	2.77	T.	0.25	1.56	0.00	0.10	0.01	2.80	1.73	1.01	13.56
1900	1.26	0.02	1.92	1.09	2.84	0.10	T.	0.00	0.06	0.58	10.96	0.00	18.83
1901	4.84	8.63	1.14	1.50	2.51	0.43	.....	.....	.....	.....	.....	.....	.....
Mean (5 years)	3.08	3.56	2.23	0.72	1.69	0.43	.....	.....	.....	.....	.....	.....	.....

SISSON, SISKIYOU COUNTY.

[Elevation, 3,555 feet.]

1889	0.60	0.40	16.27	0.63	2.40	0.23	0.00	0.00	0.00	16.45	5.80	16.13	58.91
1890	12.99	9.33	5.30	2.98	2.75	1.74	0.00	0.00	1.20	0.13	0.00	3.18	39.60
1891	0.40	7.17	0.61	3.64	2.65	[0.66]	[0.06]	0.00	0.32	0.30	0.35	11.20	27.36
1892	2.34	0.66	4.19	5.38	3.74	0.39	0.00	0.00	1.71	1.03	8.75	9.57	37.76
1893	3.10	2.80	2.77	10.60	2.66	0.03	0.00	0.00	0.68	0.61	4.25	2.87	30.37
1894	10.72	2.60	3.45	0.70	2.85	2.25	0.00	0.00	[0.95]	3.65	1.70	11.13	40.00
1895	9.12	1.22	3.62	1.27	2.05	0.00	0.55	0.00	4.65	0.00	0.70	4.31	27.49
1896	19.19	0.21	2.26	3.55	3.02	0.14	0.00	0.31	0.00	1.29	6.68	13.70	50.35
1897	2.59	4.86	0.43	0.53	0.00	0.15	0.00	0.00	0.00	2.31	2.62	3.72	17.21
1898	1.00	10.45	0.00	1.05	6.13	1.03	0.00	0.00	0.00	0.00	1.70	2.10	23.46
1899	5.55	1.03	2.98	0.23	1.49	0.89	0.00	1.32	0.00	4.01	10.83	5.67	34.00
1900	8.64	1.04	9.92	3.49	2.05	1.24	0.00	0.16	0.67	10.76	4.52	3.80	46.29
Mean (12 years)	6.35	3.48	4.32	2.84	2.65	0.73	0.05	0.15	0.85	3.38	3.99	17.28	36.07

SOLEDAD, MONTEREY COUNTY.

[Elevation, 188 feet.]

1874	1.62	0.32	1.73	0.40	0.23	0.00	0.00	0.00	0.00	0.15	0.18	0.00	4.58
1875	4.09	0.20	0.40	0.04	0.00	0.00	0.00	0.00	0.00	0.00	2.80	0.59	8.12
1876	5.26	3.45	3.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	12.15
1877	0.87	0.25	0.28	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.95	1.48	4.88
1878	3.69	4.63	0.73	0.74	0.00	0.00	0.00	0.00	0.00	0.06	0.05	1.44	11.34
1879	0.63	0.34	1.04	0.59	0.00	0.00	0.00	0.00	0.00	0.45	0.47	1.57	5.09
1880	0.55	1.05	0.87	2.19	0.23	0.00	0.00	0.00	0.00	0.00	0.18	3.14	8.21
1881	1.52	0.61	1.14	0.09	0.00	0.10	0.00	0.00	0.04	0.07	0.56	0.79	4.92
1882	0.96	1.92	4.65	0.26	0.49	0.00	0.00	0.00	0.00	0.46	1.08	0.25	10.07
1883	2.68	0.59	1.72	0.60	1.26	0.00	0.00	0.00	0.08	0.48	0.17	0.45	8.03
1884	2.74	4.24	3.74	1.67	1.13	1.56	0.00	0.10	0.00	1.78	0.30	1.74	19.00
1885	0.92	0.00	0.47	0.58	0.00	0.00	0.00	0.00	0.00	0.20	6.22	1.02	9.41
1886	2.44	0.93	1.69	1.93	0.00	0.00	0.02	0.00	0.00	0.32	1.04	0.15	8.52
1887	0.34	3.94	0.41	0.54	0.00	0.00	0.00	0.00	0.16	0.00	0.51	1.47	7.37
1888	2.86	0.55	2.10	0.15	0.35	0.00	0.00	0.00	0.25	0.00	2.03	1.73	10.02
1889	0.69	1.75	3.35	0.30	0.58	0.00	0.00	0.00	0.00	3.00	0.27	8.94	18.88
1890	3.79	2.53	0.37	0.00	0.04	0.00	0.00	0.00	0.65	0.00	0.27	1.94	9.59
1891	0.31	2.43	0.42	1.40	0.08	0.00	0.00	0.00	0.01	0.20	0.00	3.10	7.95
1892	0.20	1.47	2.03	0.29	0.85	0.00	0.00	0.00	0.05	0.75	1.70	2.97	10.31
1893	0.89	1.38	3.08	0.81	0.39	0.00	0.00	0.00	0.00	0.00	0.17	1.14	7.86
1894	2.05	0.60	0.40	0.22	0.62	0.00	0.00	0.00	0.79	0.71	0.20	2.73	8.32
1895	4.16	0.72	0.85	0.50	0.18	0.00	0.00	0.00	0.00	1.32	0.96	0.45	9.14
1896	3.32	0.00	1.19	1.66	0.05	0.00	0.00	0.03	0.00	0.59	1.74	1.16	9.74
1897	0.39	2.86	2.29	0.15	0.00	0.00	0.00	0.00	0.04	0.65	0.92	0.40	7.70
1898	0.52	0.70	0.52	0.06	0.42	0.03	0.00	0.00	0.03	0.00	0.27	0.30	2.85
1899	2.42	0.39	1.30	0.68	0.00	0.00	0.00	0.00	0.00	1.64	0.35	1.11	8.39
1900	1.37	0.20	0.37	0.74	0.40	0.00	T.	0.00	0.00	0.64	5.62	0.35	9.69
Mean (27 years)	1.90	1.41	1.50	0.65	0.27	0.06	T.	T.	0.08	0.50	1.09	1.50	8.97

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

SONOMA, SONOMA COUNTY.

[Elevation, 80 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1886	7.84	0.28	1.38	7.09	0.29	0.00	0.00	0.00	T.	0.95	0.27	2.86	20.46
1887	1.94	11.77	0.93	2.58	T.	0.00	0.00	0.00	0.25	0.00	2.08	4.97	24.47
1888	5.78	0.70	4.55	0.19	1.42	0.73	0.01	0.00	0.86	0.00	5.02	8.30	27.56
1889	0.90	0.79	3.02	2.17	1.16	0.21	0.03	T.	0.33	9.09	4.36	11.47	33.53
1890	6.02	12.86	6.16	1.80	1.12	T.	0.00	0.04	0.23	0.03	0.00	3.73	31.99
1891	1.40	10.03	2.43	2.71	1.42	0.18	0.26	0.00	0.45	0.20	0.90	8.01	27.99
1892	2.61	3.57	3.04	2.01	2.55	0.00	0.00	T.	T.	1.37	6.46	7.97	29.58
1893	4.68	3.53	6.78	1.89	0.60	0.00	0.00	0.00	0.50	0.27	5.30	2.93	26.48
1894	10.39	3.96	1.47	1.00	1.40	0.75	0.00	T.	0.33	1.42	2.81	5.64	29.17
1898	4.62	5.28	0.47	0.35	1.68	0.27	0.00	0.00	0.36	0.89	0.91	0.99	15.82
1899	7.76	0.34	6.85	1.30	1.32	0.09	0.00	0.05	0.00	6.27	4.75	4.23	32.96
1900	4.68	1.21	2.66	1.59	0.47	0.18	0.00	0.00	0.12	2.54	4.60	2.52	20.57
Mean (12 years)	4.88	4.53	3.31	2.05	1.12	0.20	0.02	0.01	0.29	1.92	3.12	5.26	26.72

SUISUN, SOLANO COUNTY.

[Elevation, 20 feet.]

1881	7.17	3.46	1.06	1.41	0.10	0.50	0.79	0.00	0.31	0.78	1.27	4.28	21.08
1882	1.78	2.53	2.57	1.53	0.14	0.00	0.00	0.00	0.00	2.43	2.82	0.57	14.37
1883	1.35	0.85	4.35	0.88	3.82	0.20	0.00	0.00	0.58	0.15	0.52	0.70	13.40
1884	2.64	4.48	6.33	3.78	0.30	1.69	0.00	0.00	T.	0.70	0.00	7.46	27.38
1885	1.06	1.25	0.64	1.52	0.02	0.00	0.00	0.00	0.05	0.22	10.38	4.43	19.57
1886	8.18	T.	1.87	4.02	0.15	0.00	0.00	0.00	0.00	0.49	0.22	1.80	16.73
1887	0.82	6.07	0.85	1.74	0.00	0.00	0.00	0.00	0.00	0.00	0.96	2.79	13.23
1888	4.28	1.58	3.97	0.00	0.65	0.30	0.00	0.00	0.70	0.00	3.88	4.48	19.84
1889	0.50	0.85	5.65	0.43	1.47	0.00	0.00	0.00	0.00	6.47	3.27	10.18	28.82
1890	7.38	4.50	5.46	1.10	1.02	0.00	0.00	0.00	0.33	0.00	0.00	2.81	22.60
1891	0.76	8.99	1.00	2.85	0.94	0.00	0.00	0.00	1.06	0.00	0.27	6.69	22.56
1892	1.73	2.98	2.05	2.09	2.52	0.00	0.00	0.00	0.00	1.18	3.53	7.06	23.14
1893	4.19	2.27	3.51	0.72	0.16	0.00	0.00	0.00	1.11	0.74	2.76	2.06	17.52
1894	6.33	2.29	0.88	0.41	1.85	0.77	0.00	0.00	0.95	1.28	0.53	9.53	24.82
1895	8.14	2.69	1.50	1.07	0.66	0.00	0.00	0.00	0.64	T.	1.73	1.26	17.69
1896	9.57	0.11	3.04	5.53	0.95	0.00	0.00	0.56	0.34	1.44	5.29	2.93	29.76
1897	2.47	5.16	4.21	0.43	0.03	0.08	0.00	0.00	0.03	2.86	0.69	2.09	18.05
1898	1.42	2.18	0.14	0.32	1.38	0.27	0.00	0.00	0.46	0.88	0.30	1.44	8.79
1899	5.34	0.00	7.70	0.47	0.07	0.71	0.00	0.20	0.00	2.57	3.18	3.52	23.76
1900	4.00	0.53	1.55	1.48	0.35	0.02	0.00	0.00	0.02	0.65	4.66	1.67	14.93
Mean (20 years)	3.96	2.64	2.92	1.59	0.83	0.23	0.04	0.04	0.33	1.14	2.31	3.89	19.90

SUMMERDALE, MARIPOSA COUNTY.

[Elevation, 5,270 feet.]

1896	21.56	0.40	6.39	9.21	1.45	0.00	0.38	1.38	1.28	2.53	9.66	4.56	58.80
1897	4.42	17.66	11.35	1.13	0.28	0.63	0.00	0.00	0.08	5.02	2.80	4.57	47.84
1898	2.60	7.25	3.36	0.53	3.18	0.00	0.00	0.00	1.98	1.20	1.64	2.64	24.33
1899	7.96	1.24	18.66	1.70	0.99	1.79	0.00	0.02	0.00	7.11	7.25	13.63	60.35
1900	7.05	0.72	6.36	5.50	1.87	0.07	0.00	T.	0.75	9.57	18.91	1.79	52.59
Mean (5 years)	8.72	5.45	9.22	3.61	1.55	0.50	0.08	0.28	0.81	5.09	8.05	5.44	48.78

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

SUMMIT, PLACER COUNTY.

[Elevation, 1,770 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1871	7.60	7.55	4.05	4.00	0.31	0.89	0.00	0.00	0.30	0.40	8.50	27.00	60.60
1872	4.00	16.10	5.90	5.60	0.30	0.00	0.00	0.00	0.00	0.00	0.00	6.00	37.90
1873	2.31	16.20	6.05	2.55	2.11	0.00	0.03	T.	0.00	0.00	0.00	11.70	40.95
1874	5.00	0.00	0.00	2.00	3.60	T.	0.00	0.00	0.00	3.80	3.60	0.85	18.85
1875	8.15	0.12	4.80	0.80	1.46	2.55	T.	0.00	0.00	[2.23]	6.50	7.25	[33.86]
1876	14.65	8.70	13.80	2.60	1.60	T.	1.21	0.10	0.56	2.98	0.50	0.20	46.90
1877	8.90	0.69	3.44	4.84	3.75	0.12	0.00	0.00	0.30	0.55	3.34	0.80	26.73
1878	10.00	11.50	3.05	2.40	1.60	0.00	0.00	0.09	0.44	1.21	0.80	1.60	32.69
1879	13.65	8.70	21.05	4.52	2.55	0.10	0.00	T.	0.00	4.20	5.60	13.30	73.67
1880	6.60	7.50	8.90	30.40	3.60	0.00	0.80	0.00	0.00	0.00	0.50	6.20	64.50
1881	7.50	4.60	1.50	1.00	0.05	0.50	0.00	0.00	0.60	3.10	3.05	9.05	30.95
1882	7.40	9.00	19.30	3.25	0.60	0.00	0.00	0.00	0.75	12.95	3.95	4.92	62.12
1883	1.00	2.60	7.70	3.40	3.42	0.00	0.00	0.00	0.10	0.95	1.20	3.20	23.57
1884	7.60	12.70	9.10	12.60	0.80	4.04	0.00	0.00	1.10	3.13	0.00	9.40	60.47
1885	1.40	0.58	0.10	4.88	1.00	0.80	0.00	T.	0.05	0.00	13.60	3.00	25.41
1886	13.90	1.40	7.80	6.40	0.95	0.00	0.00	0.00	0.00	3.10	1.70	5.75	41.00
1887	6.25	20.70	1.40	5.80	0.95	1.60	0.10	T.	T.	0.07	1.50	11.60	49.97
1888	9.20	1.29	8.05	2.30	1.04	3.72	3.51	0.28	0.00	0.00	1.90	5.26	36.55
1889	1.00	1.50	9.55	1.90	6.30	0.22	0.00	0.00	0.00	5.65	6.80	18.50	51.42
1890	19.20	11.60	14.00	2.60	0.25	0.00	0.00	0.00	0.00	0.00	0.00	7.40	55.05
1891	1.50	1.38	5.10	4.60	1.10	0.00	0.00	0.00	[0.20]	0.05	0.30	11.90	26.13
1892	4.00	3.40	7.40	4.50	6.30	0.20	0.00	0.00	0.00	0.60	8.80	9.50	44.70
1893	7.90	10.80	14.50	9.20	0.00	0.00	0.00	0.00	0.00	0.30	3.60	6.00	52.30
1894	15.50	15.25	3.40	4.30	2.40	0.00	0.00	0.00	0.50	2.90	1.00	24.50	69.75
1895	25.80	4.20	4.70	2.50	2.40	0.00	0.00	0.00	0.20	0.00	1.40	8.30	49.50
1896	10.50	0.70	9.70	18.20	5.40	0.00	[0.21]	[0.02]	0.40	0.90	12.30	4.10	62.43
1897	4.05	14.35	18.00	1.25	0.00	0.70	0.00	0.00	0.03	2.50	26.50	4.20	71.58
1898	4.00	7.10	5.20	0.80	2.90	0.90	0.00	0.00	0.00	4.40	2.50	3.60	31.40
1899	12.70	5.20	15.75	1.75	3.60	0.70	0.00	1.00	0.00	16.05	9.15	7.90	78.80
1900	5.25	4.75	8.15	4.80	3.97	0.50	0.25	T.	0.95	3.50	6.90	3.50	42.52
Mean (30 years)	8.22	7.01	8.05	5.19	2.14	0.58	0.20	0.50	0.22	2.52	4.52	7.88	46.58

SUSANVILLE, LASSEN COUNTY.

[Elevation, 4,195 feet.]

1889	0.08	0.60	4.81	1.07	6.26	1.55	0.05	0.00	0.00	4.18	2.74	8.55	29.84
1890	8.72	4.71	4.60	1.06	1.51	0.14	0.00	0.15	0.15	T.	0.35	3.47	24.86
1891	1.00	7.84	2.49	0.80	2.41	1.65	0.55	T.	0.65	0.45	1.10	4.91	23.85
1892	1.77	2.96	2.80	2.80	1.35	0.98	0.00	0.00	[0.86]	0.88	10.66	6.80	31.81
1893	4.82	3.53	1.55	1.88	0.67	0.00	T.	T.	1.65	0.60	1.80	0.95	17.40
1894	6.10	3.53	2.35	0.95	1.55	0.75	0.00	0.20	0.30	1.96	0.40	8.66	26.75
1895	10.29	3.00	1.26	0.50	1.50	T.	T.	0.20	3.00	0.10	1.95	2.91	24.71
1896	6.94	0.05	3.23	5.10	2.22	T.	0.20	0.20	1.33	0.50	3.88	2.96	26.61
1897	5.99	4.25	2.66	0.30	0.90	0.42	0.00	0.08	0.55	2.45	3.13	2.22	22.95
1898	0.45	2.38	0.35	0.24	0.54	1.02	0.00	0.08	0.10	0.80	1.74	0.65	8.35
1899	2.90	0.31	3.32	0.92	1.42	0.00	0.00	0.46	0.00	5.21	2.70	3.59	20.83
1900	1.50	1.22	2.97	0.90	0.64	0.40	0.63	0.02	0.25	2.67	3.29	2.00	16.49
Mean (12 years)	4.21	2.86	2.70	1.37	1.75	0.58	0.12	0.12	0.74	1.65	2.81	3.97	22.87

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

TEHACHAPI, KERN COUNTY.

[Elevation, 3,964 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877	0.56	0.14	0.89	0.60	0.12	0.00	0.02	0.00	0.00	T.	0.50	2.91	5.74
1878	2.59	6.32	1.76	1.93	0.28	0.09	0.00	T.	0.00	0.30	0.04	0.64	13.95
1879	2.62	0.45	0.19	1.39	0.09	0.12	0.00	0.00	0.00	0.52	1.03	5.52	11.93
1880	2.81	1.94	1.47	2.24	0.00	0.00	0.00	0.00	0.00	0.75	0.10	2.01	11.32
1881	1.79	2.05	2.94	0.50	0.06	0.00	0.00	0.00	0.32	0.10	0.60	1.12	8.48
1882	0.65	2.91	1.40	0.63	0.20	0.15	0.00	0.00	0.00	0.74	0.18	0.50	7.36
1883	0.15	4.47	1.51	2.72	1.73	0.00	0.00	0.00	0.00	0.81	0.14	0.72	12.25
1884	1.54	7.26	3.46	1.85	1.26	1.05	0.00	0.64	0,00	0.13	0.29	3.96	21.44
1885	0.10	0.00	0.26	1.48	0.30	0.00	0.05	0.31	0.00	0.00	3.70	0.52	6.72
1886	1.58	6.06	4.10	4.57	0.00	0.00	0.10	0.00	0.00	T.	1.15	0.60	18.16
1887	0.50	8.88	0.24	1.95	0.26	0.00	0.00	0.00	0.00	0.86	0.26	1.44	14.39
1888	2.57	2.60	1.20	1.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	3.65	11.52
1889	0.40	0.60	3.56	3.96	1.07	0.00	0.00	0.80	0.00	2.70	0.70	5.30	19.05
1890	1.75	0.70	0.30	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	3.48	6.73
1891	0.03	3.45	0.80	0.90	0.70	0.00	0.00	0.00	1.17	0.00	0.00	3.10	10.15
1892	0.92	[2.68]	2.72	0.61	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.40	7.88
1893	0.85	3.61	5.00	0.65	0.00	0.00	0.00	0.00	0.00	0.50	0.50	5.25	16.36
1894	2.80	1.68	0.00	[1.24]	0.32	0.27	0.00	0.00	[0.10]	0.00	0.00	3.75	10.16
1895	3.21	0.69	1.08	0.50	0.75	0.00	0.00	0.00	0.00	0.44	0.60	0.26	7.53
1896	1.57	0.00	2.80	0.63	0.00	0.00	0.00	0.85	0.00	1.45	0.53	1.13	8.96
1897	1.78	2.03	0.18	0.25	0.00	0.00	0.00	0.00	0.02	0.38	0.00	1.00	5.64
1898	1.20	0.34	1.35	0.10	0.82	0.00	0.00	0.00	0.00	0.00	T.	0.20	4.01
1899	0.68	0.60	1.62	0.00	0.22	0.38	0.00	0.00	0.00	0.57	1.53	0.61	6.21
1900	0.64	0.39	0.29	1.29	0.50	0.23	T.	0.00	0.00	0.46	1.58	0.00	5.33
Mean (24 years)	1.39	2.49	1.63	1.30	0.40	0.10	0.01	0.11	0.09	0.45	0.56	1.96	10.47

TEHAMA, TEHAMA COUNTY.

[Elevation, 220 feet.]

1871	3.00	1.60	0.81	1.83	0.80	0.00	0.00	0.00	0.00	T.	0.00	0.00	8.04
1872	0.00	3.63	1.38	0.99	0.00	0.00	0.00	0.10	1.10	0.07	0.00	2.83	10.10
1873	1.46	4.64	0.77	0.08	T.	0.00	0.00	0.00	0.00	0.00	0.00	6.63	13.58
1874	3.64	2.16	1.84	0.33	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	9.58
1875	3.87	0.00	0.47	0.00	0.00	0.00	0.00	T.	0.00	0.95	5.15	2.00	12.44
1876	4.80	4.44	2.87	0.98	T.	T.	0.75	T.	0.01	1.59	0.71	0.00	16.15
1877	1.87	1.45	1.89	0.04	1.84	0.42	0.10	0.02	0.00	2.05	1.59	1.64	12.91
1878	11.35	7.00	4.31	1.34	0.44	0.10	0.00	0.00	0.00	0.55	1.30	0.39	26.78
1879	2.07	0.94	1.25	1.55	1.20	0.10	0.01	0.70	0.00	0.92	3.00	4.58	16.32
1880	0.78	1.35	0.50	3.62	0.19	0.00	0.00	0.00	0.00	0.05	0.10	5.42	12.01
1881	1.65	0.75	0.36	0.82	0.40	0.85	T.	0.00	0.35	1.25	0.35	3.09	9.87
1882	1.03	2.93	2.17	1.32	0.05	0.28	0.00	0.00	0.08	2.72	3.77	0.62	14.97
1883	0.73	0.39	2.14	1.33	2.75	0.00	0.00	0.00	1.03	1.70	0.50	0.44	11.01
1884	3.15	2.08	4.94	2.61	0.20	1.55	0.00	0.00	0.00	0.69	0.00	6.16	21.38
1885	1.67	0.60	0.05	0.70	0.73	0.72	0.00	0.00	0.48	T.	10.42	3.00	18.37
1886	4.08	T.	0.98	4.00	0.18	0.00	0.00	T.	0.00	0.78	T.	2.00	12.02
1887	0.33	4.29	1.10	1.56	0.45	0.00	0.00	0.00	0.00	0.00	1.56	2.62	11.91
1888	4.70	2.40	4.10	0.25	0.25	0.30	0.00	0.00	0.00	0.00	3.61	8.33	23.94
1889	0.20	0.30	10.41	0.62	0.34	0.95	0.00	0.00	0.00	11.58	3.41	11.45	39.26
1890	4.68	1.05	3.79	0.75	1.45	0.00	0.00	0.00	0.00	0.00	0.00	2.88	14.60
1891	1.08	9.00	1.50	2.26	1.96	0.89	1.00	0.00	0.06	0.50	0.50	4.79	23.04
1892	5.35	1.59	1.41	3.00	4.47	0.67	0.00	0.00	0.00	0.23	16.58	12.96	46.26
1893	4.68	4.99	8.03	3.76	0.75	0.00	0.00	0.00	1.02	0.03	1.55	1.65	26.46
1894	5.92	1.82	1.00	0.50	1.01	0.52	0.00	0.25	0.28	2.37	0.00	7.25	20.92
1895	11.23	2.85	2.32	0.48	0.80	0.00	0.60	0.00	2.13	1.17	1.47	2.50	25.55
1896	11.15	0.10	2.35	3.90	1.23	0.02	0.00	0.47	0.58	0.65	2.90	4.33	27.68
1897	2.58	5.97	1.91	1.11	0.08	0.86	0.00	0.00	0.13	2.48	0.56	1.77	17.40
1898	0.55	3.20	0.00	0.25	0.98	0.11	0.00	0.00	0.53	0.53	0.63	1.76	8.54
1899	6.11	0.00	4.54	0.37	1.86	0.59	0.00	0.00	0.00	2.06	3.97	3.65	23.15
1900	3.59	1.35	1.42	2.85	1.19	0.53	0.00	0.00	0.00	3.61	4.61	2.02	21.17
Mean (30 years)	3.58	2.43	2.35	1.44	0.85	0.30	0.08	0.05	0.26	1.28	2.33	3.56	18.51

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

TRACY, SAN JOAQUIN COUNTY.

[Elevation, 64 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1879	2.32	2.07	2.15	0.96	0.66	0.27	0.00	0.00	0.00	0.32	1.55	1.97	12.27
1880	0.69	1.03	0.62	2.77	0.25	0.00	0.00	0.00	0.00	0.00	0.43	5.08	10.87
1881	1.85	1.61	0.95	0.76	0.00	0.00	0.00	0.00	T.	0.15	0.70	0.85	6.87
1882	0.70	0.50	2.43	1.48	0.46	0.00	0.00	0.00	0.20	0.75	0.70	0.20	7.42
1883	1.90	0.40	1.83	0.30	1.82	0.00	0.00	0.00	0.20	0.40	0.30	0.55	7.70
1884	0.90	3.43	3.27	1.65	0.10	2.05	0.00	0.10	0.00	0.82	0.00	2.49	14.81
1885	0.93	0.10	0.10	0.37	0.00	0.00	0.00	0.00	0.00	0.00	5.60	0.85	7.95
1886	2.55	0.35	1.40	1.55	0.00	0.00	0.00	0.00	0.00	0.40	0.10	0.50	6.85
1887	0.03	2.93	0.29	3.02	0.00	0.00	0.00	0.00	T.	0.00	0.05	2.43	8.75
1888	1.99	0.84	0.61	0.00	0.54	0.19	0.00	0.00	0.35	0.00	2.85	1.71	9.08
1889	0.60	0.55	3.20	0.30	0.75	0.00	0.00	0.00	0.00	3.02	2.59	6.85	17.86
1890	4.76	1.98	1.56	0.97	0.19	0.00	0.00	0.00	1.45	0.00	0.00	1.83	12.74
1891	0.35	1.75	1.70	1.54	0.57	0.15	0.00	0.00	0.27	0.00	0.10	3.57	10.00
1892	0.43	0.95	1.90	0.71	1.00	0.05	0.00	0.00	0.00	0.00	0.00	7.21	12.25
1893	1.22	1.14	1.51	0.55	0.00	0.00	0.00	0.00	0.04	0.00	0.87	0.87	6.20
1894	2.18	2.09	0.00	0.03	2.00	1.14	0.00	0.00	1.28	0.43	0.86	4.46	13.92
1895	2.82	1.22	0.48	0.50	0.56	0.00	0.00	0.00	0.10	0.40	0.77	0.76	7.61
1896	3.89	0.00	0.61	1.98	0.35	0.00	0.12	0.17	[0.20]	0.80	1.45	1.13	10.70
1897	1.38	1.77	2.37	0.00	0.00	0.00	0.00	0.00	0.00	1.24	[2.98]	0.72	8.46
1898	0.70	0.61	0.35	0.00	0.60	0.00	0.00	0.00	0.00	0.15	0.20	1.26	3.87
1899	2.16	0.02	4.89	0.14	0.29	0.00	0.00	0.00	0.00	3.78	2.24	1.47	14.97
1900	1.88	0.18	1.45	1.42	2.00	T.	0.00	0.00	0.03	0.52	3.45	0.65	11.58
Mean (22 years)	1.64	1.16	1.53	0.95	0.55	0.18	0.01	0.01	0.19	0.60	1.15	2.16	10.12

TULARE (NEAR), TULARE COUNTY.

[Elevation, 274 feet.]

1893	0.64	1.20	3.02	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.50	1.07	6.76
1894	1.28	0.34	1.16	0.13	0.36	1.15	0.00	0.00	0.50	0.11	0.06	2.99	8.08
1895	3.52	1.23	0.86	0.60	0.60	0.00	0.00	0.00	0.20	0.43	0.98	0.36	8.78
1896	1.78	0.01	0.72	1.03	0.14	0.00	0.14	0.06	0.03	0.74	1.11	0.46	6.22
1897	2.40	1.61	1.29	0.35	0.00	0.00	0.00	0.00	0.58	0.59	0.26	0.79	7.87
1898	0.63	0.97	0.72	T.	0.59	0.00	0.00	0.00	3.75	0.01	0.16	0.19	7.02
1899	0.92	0.14	2.28	0.17	0.02	0.45	0.00	0.00	T.	1.35	1.32	1.28	7.93
1900	1.02	0.10	0.77	1.78	2.03	0.00	T.	T.	0.18	0.04	2.41	0.19	8.52
Mean (8 years)	1.52	0.70	1.35	0.55	0.47	0.20	0.02	0.01	0.66	0.41	0.85	0.92	7.65

UKIAH, MENDOCINO COUNTY.

[Elevation, 620 feet.]

1877	7.38	4.70	2.14	0.59	0.35	0.00	0.00	0.00	0.00	1.50	4.38	3.59	24.63
1878	19.03	17.24	7.60	1.27	0.27	0.00	0.00	0.00	1.05	3.70	0.00	0.68	50.84
1879	4.44	6.17	14.47	3.36	2.36	0.00	0.00	0.12	0.60	0.87	5.92	10.08	48.39
1880	5.03	2.17	4.45	11.78	1.84	0.00	0.00	0.00	0.00	0.00	0.15	12.27	37.69
1881	10.25	4.96	0.70	1.08	0.08	0.00	0.00	0.00	0.22	1.00	1.00	6.72	26.01
1882	3.41	7.87	4.06	1.92	0.50	0.00	0.00	0.00	0.73	2.70	3.95	2.88	28.02
1883	2.88	1.25	3.62	3.21	2.71	0.00	0.00	0.00	1.15	1.85	0.64	1.31	18.62
1884	4.12	3.32	5.42	5.16	0.43	1.01	0.00	0.01	0.40	0.76	0.17	12.94	33.74
1885	2.51	1.91	0.25	0.43	0.36	0.14	0.00	0.00	0.15	0.53	19.24	5.43	30.95
1886	9.74	0.23	2.96	6.43	0.98	0.00	0.00	0.00	0.00	1.27	0.86	4.43	26.90
1887	2.56	7.85	1.74	3.21	0.41	0.00	0.00	0.00	0.30	0.00	1.52	4.89	22.48
1888	10.29	2.07	3.84	0.10	0.23	2.18	0.18	0.00	1.51	0.00	4.07	7.48	31.95
1889	1.04	0.84	9.94	1.36	4.25	0.15	0.00	0.00	0.00	8.05	4.17	15.63	45.43
1890	14.74	5.00	9.47	2.56	0.86	0.00	0.00	0.00	0.49	0.05	0.20	4.80	38.17
1891	2.13	10.38	2.44	2.59	1.10	0.32	0.28	0.00	1.00	1.00	0.86	8.60	30.70
1892	4.05	3.70	3.56	3.83	2.61	0.00	0.00	0.00	0.00	1.80	7.19	8.93	35.67
1893	4.75	6.75	8.36	4.12	1.63	0.00	0.02	0.00	1.85	0.64	8.81	3.65	40.58
1894	15.68	9.41	3.03	2.36	1.21	1.27	T.	0.00	0.77	2.45	1.37	15.47	53.02
1895	19.20	5.17	4.80	1.36	1.96	0.00	0.11	0.00	1.70	0.21	2.81	4.98	42.30
1896	16.68	1.50	3.95	5.97	2.94	T.	0.02	0.04	0.37	1.14	7.00	10.60	50.21
1897	4.25	10.35	6.87	0.91	0.09	1.70	T.	0.00	0.10	1.87	3.02	2.77	31.93
1898	1.23	7.08	0.68	0.80	1.03	0.65	0.00	T.	0.82	1.24	2.02	2.41	17.96
1899	10.54	0.43	7.53	0.56	2.05	0.00	0.00	0.02	0.00	4.06	8.86	6.94	40.99
1900	4.55	2.49	3.99	1.91	0.51	0.36	T.	0.00	0.35	5.00	5.42	4.98	29.56
Mean (24 years)	7.52	5.12	4.83	2.79	1.28	0.33	0.03	0.01	0.57	1.74	3.90	6.77	34.86

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

UPPER LAKE, LAKE COUNTY.

[Elevation, 1,350 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1886	6.20	0.00	1.05	4.20	1.30	0.00	0.00	0.00	0.00	0.55	0.25	2.85	16.40
1887	1.20	7.10	1.00	1.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	15.00
1888	7.30	1.40	1.75	0.00	0.80	0.35	T.	0.00	0.85	0.00	3.20	3.95	19.60
1889	0.05	0.25	6.75	0.55	2.20	0.00	0.25	0.00	0.00	6.35	3.40	10.65	30.45
1890	10.60	3.00	6.25	1.40	0.80	0.00	0.00	0.00	0.60	0.00	0.00	6.00	28.65
1891	1.50	8.70	1.08	2.93	0.43	0.15	0.13	0.00	0.95	0.62	0.71	7.35	24.55
1892	3.93	2.50	2.32	2.84	3.71	0.49	0.00	0.00	T.	1.17	5.53	6.98	29.42
1893	4.08	3.19	5.47	2.37	1.04	0.00	T.	0.00	0.85	0.47	4.88	2.82	25.12
1894	10.43	6.21	1.80	1.46	1.02	1.12	0.00	T.	0.53	2.05	1.13	11.62	37.37
1895	14.89	4.15	3.20	1.41	1.39	0.00	0.05	T.	1.23	T.	2.09	3.83	32.24
1896	11.18	0.80	2.39	6.01	2.07	0.00	T.	0.87	0.42	1.04	5.07	6.47	36.32
1897	3.45	6.35	4.58	0.42	0.22	0.97	0.05	0.00	0.08	1.67	2.38	2.61	22.78
1898	0.93	4.57	0.36	0.43	1.90	0.58	0.00	T.	0.60	1.01	1.66	1.34	13.38
1899	8.16	0.25	5.59	0.90	1.00	0.05	0.00	0.03	0.00	3.49	6.33	9.79	35.59
1900	3.98	1.31	3.53	2.13	0.81	0.35	T.	0.00	0.03	3.96	5.08	3.63	24.81
Mean (15 years)	5.86	3.32	3.14	1.93	1.25	0.27	0.03	0.06	0.41	1.49	2.78	5.58	26.11

UPPER MATTOLE, HUMBOLDT COUNTY.

[Elevation, 244 feet.]

1887	9.61	11.91	3.34	9.80	[4.90]	0.59	[0.12]	[0.06]	0.09	0.18	6.44	11.24	58.28
1888	41.63	4.13	8.96	1.51	0.48	4.19	0.11	T.	0.00	1.06	4.86	13.62	80.55
1889	4.99	2.57	20.73	5.25	9.45	0.45	0.00	0.00	0.39	18.92	9.14	29.36	101.25
1890	33.40	20.36	17.83	4.38	0.40	0.74	0.07	T.	1.52	0.81	0.67	9.88	90.06
1891	5.66	17.18	7.85	11.22	6.95	2.00	0.29	T.	2.30	4.94	4.55	17.31	80.25
1892	10.37	5.58	8.08	9.52	5.80	0.39	0.00	0.00	1.61	4.75	13.69	24.48	84.27
1893	6.01	8.25	18.05	10.96	4.18	0.00	0.00	0.00	3.09	3.65	14.93	9.50	78.62
1894	27.56	11.97	8.45	3.80	2.05	3.09	0.00	0.00	2.75	6.12	5.52	27.77	99.08
1895	23.37	8.88	10.20	6.81	7.20	0.00	0.86	0.00	9.57	0.00	4.73	9.58	81.20
1896	26.22	3.59	8.03	17.02	9.91	0.50	0.00	0.65	0.74	3.93	13.44	18.49	102.52
1897	6.88	17.86	13.29	1.83	0.53	1.48	0.00	0.00	0.93	4.75	5.93	7.58	61.06
1898	3.34	22.25	1.55	2.88	6.93	3.32	0.00	0.00	2.66	1.56	4.86	5.08	54.43
1899	14.30	4.24	11.25	1.47	2.84	0.12	0.00	0.22	1.00	9.54	32.85	17.84	95.67
1900	12.27	8.20	9.37	6.51	3.61	1.84	0.00	0.00	0.32	15.02	6.56	12.31	76.01
Mean (14 years)	16.12	10.50	10.50	6.64	4.66	1.34	0.10	0.07	1.93	5.37	9.16	15.29	81.66

VACAVILLE, SOLANO COUNTY.

[Elevation, 175 feet.]

1880	3.48	2.28	2.73	8.26	7.58	1.78	0.00	0.00	0.00	0.00	0.07	21.25	47.43
1881	15.61	4.58	1.13	2.36	0.00	0.00	0.00	0.00	0.00	0.28	1.93	5.36	31.25
1882	2.76	8.38	4.17	2.37	0.19	0.00	0.00	0.00	1.10	3.11	3.77	1.15	22.00
1883	2.45	2.11	6.26	2.03	5.63	0.00	0.00	0.00	0.00	2.24	0.49	1.63	22.84
1884	6.02	7.19	11.45	7.48	0.24	0.00	0.00	0.00	0.41	1.20	0.00	16.18	50.17
1885	1.89	0.28	0.28	1.54	0.00	0.00	0.00	0.00	0.00	0.30	15.98	5.68	25.95
1886	8.74	0.17	1.32	4.84	0.05	0.00	0.00	0.00	0.00	0.27	0.14	2.26	17.79
1887	1.34	9.40	1.06	2.65	0.00	0.00	0.00	0.00	0.16	0.00	1.01	5.62	21.24
1888	6.34	0.45	4.21	0.08	0.04	0.11	0.00	0.00	0.71	0.00	5.77	5.35	23.06
1889	0.44	0.98	7.92	0.80	3.04	0.15	0.00	0.00	0.00	7.98	4.26	12.48	38.05
1890	11.74	5.49	5.74	0.96	1.40	0.00	0.00	0.00	0.28	0.04	0.00	2.92	28.57
1891	0.79	12.93	0.57	2.13	0.67	0.17	0.00	T.	0.50	0.18	0.41	6.91	25.26
1892	2.36	3.45	2.44	2.31	3.16	0.08	0.00	0.00	0.07	1.45	6.75	7.11	29.18
1893	4.50	3.13	4.54	0.80	0.56	0.00	T.	0.00	0.18	0.20	3.79	2.55	20.24
1894	8.70	4.50	1.18	0.62	1.55	0.84	0.00	0.00	1.13	3.33	0.63	12.80	35.28
1895	12.81	3.04	2.07	2.08	1.02	0.00	T.	0.00	0.80	0.06	2.15	1.87	25.90
1896	14.46	0.15	4.31	7.03	1.25	0.00	T.	0.57	0.40	1.30	6.23	3.54	39.24
1897	6.36	4.96	5.23	0.24	0.27	0.09	0.00	0.02	0.07	2.32	1.03	2.08	22.67
1898	1.59	3.01	0.19	0.52	1.94	0.00	0.00	0.00	0.49	1.06	0.44	1.30	10.54
1899	7.11	0.20	10.26	0.79	1.25	0.32	0.00	0.16	0.00	3.61	3.62	3.67	30.99
1900	3.82	0.52	2.46	1.39	0.34	T.	0.00	0.00	0.07	1.32	6.26	1.68	17.86
Mean (21 years)	5.87	3.44	3.79	2.44	1.44	0.17	T.	0.04	0.30	1.44	3.08	5.88	27.88

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

VALLEY SPRINGS, CALAVERAS COUNTY.

[Elevation, 673 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1888	5.32	0.49	1.74	1.94	0.23	0.00	0.00	0.00	0.47	0.00	2.44	2.29	14.92
1889	0.28	0.77	4.22	1.42	2.69	0.00	0.00	0.00	0.00	4.24	4.34	9.54	27.50
1890	7.28	3.62	5.03	1.75	2.35	0.00	0.00	0.00	1.20	0.00	0.00	3.07	24.30
1891	0.58	3.15	7.45	2.60	0.70	0.74	0.00	0.00	0.23	0.12	0.25	5.75	21.57
1892	1.90	1.75	4.15	1.80	2.93	0.15	0.00	0.00	0.12	1.16	3.40	7.66	25.02
1893	3.24	3.46	7.32	1.87	0.10	0.00	0.00	0.00	1.13	0.00	3.11	2.08	22.31
1894	6.91	5.86	0.91	0.95	4.09	1.28	0.00	0.00	1.00	2.04	1.20	10.51	34.75
1895	8.98	2.70	2.65	3.00	1.72	0.00	0.00	0.00	0.50	T.	1.05	2.04	22.64
1896	6.43	0.24	3.13	6.59	0.90	0.00	0.33	0.00	0.00	1.77	5.81	3.09	28.29
1897	2.97	7.77	6.00	1.53	0.39	0.69	0.00	0.00	0.00	2.35	1.28	1.50	24.48
1898	0.98	3.34	0.88	0.46	1.41	0.14	0.00	0.00	0.66	0.84	1.31	2.19	12.21
1899	2.78	0.21	7.04	0.55	0.62	0.82	0.00	0.09	0.00	4.53	4.28	4.42	25.34
1900	1.46	0.96	2.62	3.19	1.41	0.04	0.00	0.00	0.04	1.58	5.62	1.35	18.27
Mean (13 years)	3.78	2.64	4.09	2.13	1.50	0.30	0.03	0.01	0.41	1.43	2.62	4.27	23.20

VENTURA, VENTURA COUNTY.

[Elevation, 50 feet.]

1892	1.01	4.54	2.25	0.57	0.00	0.00	0.00	0.00	0.00	0.70	2.12	5.80	17.02
1893	3.17	3.02	8.19	0.42	0.04	0.00	0.00	0.00	0.00	0.85	0.25	3.04	18.98
1894	0.81	0.50	0.27	0.17	0.50	0.00	0.13	T.	0.95	0.10	T.	3.13	6.56
1895	6.11	1.00	3.17	0.47	0.07	0.00	0.00	T.	T.	0.10	0.74	0.67	12.33
1896	5.13	T.	2.16	1.10	T.	T.	0.20	T.	0.00	0.85	1.50	2.58	13.52
1897	4.07	4.83	1.77	0.05	0.04	0.00	0.00	0.01	0.50	1.50	0.07	0.00	12.84
1898	1.54	0.74	0.68	0.00	1.40	0.00	T.	0.00	1.10	0.12	T.	0.16	5.74
1899	4.89	0.00	1.73	0.42	T.	0.71	0.00	0.00	T.	1.56	1.40	1.55	12.26
1900	1.90	0.10	1.19	0.38	1.40	T.	T.	0.00	T.	0.25	4.47	0.08	9.72
Mean (9 years)	3.18	1.64	2.38	0.40	0.38	0.08	0.04	T.	0.28	0.67	1.18	1.88	12.11

VINA, TEHAMA COUNTY.

[Elevation, 213 feet.]

1889	0.09	0.29	6.95	1.19	1.94	0.50	0.00	0.00	0.00	7.24	2.59	12.16	32.95
1890	6.05	3.58	4.26	0.00	2.11	0.00	0.00	0.00	0.51	0.00	0.00	2.21	18.72
1891	0.92	9.29	0.50	2.06	0.80	0.50	0.08	0.00	0.00	0.40	0.25	3.58	18.33
1892	4.18	1.13	1.50	2.30	1.67	0.19	0.00	0.00	0.00	1.06	3.41	5.88	21.27
1893	2.99	3.24	4.62	2.21	0.70	0.00	0.00	0.00	0.63	0.02	1.99	2.15	18.55
1894	4.18	2.51	1.41	0.89	0.96	0.51	0.00	0.00	1.05	1.18	0.65	8.28	21.57
1895	8.24	2.39	2.60	0.94	1.47	0.00	0.26	0.00	2.18	0.00	1.20	1.71	20.99
1896	9.01	0.17	2.16	3.72	1.03	0.00	0.00	0.40	0.96	0.70	3.61	6.00	27.76
1897	4.43	4.28	2.05	1.30	0.00	0.25	0.00	0.00	0.20	[1.32]	0.88	1.88	16.59
1898	0.85	3.28	[2.89]	[1.62]	[1.19]	0.00	0.00	0.00	[0.61]	[1.32]	0.04	1.05	12.85
1899	6.68	0.00	3.78	0.59	0.96	1.13	0.00	0.00	0.00	[1.32]	2.62	2.45	19.53
1900	3.07	0.77	1.55	3.30	1.65	0.35	0.00	0.05	T.	1.96	4.45	1.65	18.80
Mean (12 years)	4.22	2.58	2.86	1.68	1.21	0.29	0.03	0.04	0.51	1.37	1.81	4.08	20.66

VOLCANO SPRINGS, SAN DIEGO COUNTY.

[Elevation, —220 feet.]

1889	0.82	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.40	2.74	4.76
1890	0.09	0.68	0.00	0.03	0.00	0.00	0.03	0.07	0.00	0.00	0.00	0.47	1.37
1891	0.00	2.62	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	2.95
1892	0.16	0.59	0.04	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.82
1893	0.02	0.00	0.00	0.00	T.	0.00	1.20	0.45	0.00	0.00	0.30	0.00	1.97
1894	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T.	0.00	1.08	0.00	1.00	2.08
1895	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.42
1896	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T.	0.00	0.00	0.00	[0.52]	0.52
1897	0.00	0.00	0.00	0.00	0.00	0.00	T.	0.03	0.00	0.00	0.00	T.	0.03
1898	T.	0.00	0.00	0.00	0.00	0.00	0.00	[0.09]	0.00	0.00	0.00	0.47	0.56
1899	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.07	0.13	0.19	0.20	T.	0.63
1900	0.55	0.00	0.63	T.	0.00	0.00	0.08	0.00	0.03	0.60	0.05	0.00	1.94
Mean (12 years)	0.26	0.32	0.11	T.	T.	0.00	0.11	0.09	0.01	0.17	0.08	0.43	1.59

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

WESTLEY, STANISLAUS COUNTY.

[Elevation, 90 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1889	0.38	0.33	2.60	0.41	0.88	T.	0.00	0.00	0.00	2.65	1.92	4.92	14.09
1890	3.48	1.69	0.89	1.13	0.33	0.00	0.00	0.00	0.00	0.00	0.00	1.75	9.27
1891	0.12	2.27	1.46	1.21	0.18	0.10	0.00	0.00	0.21	0.11	0.07	3.25	8.98
1892	0.44	1.32	1.91	0.82	0.85	0.00	0.00	0.00	0.46	1.74	1.77	4.11	13.42
1893	1.38	1.57	2.56	0.74	0.32	0.00	0.00	0.00	0.08	0.00	0.64	1.00	8.29
1894	1.93	1.78	0.11	0.04	1.19	0.85	0.00	0.00	0.80	0.65	0.23	4.67	12.25
1895	4.16	0.87	1.15	0.91	0.48	0.00	0.00	0.00	0.12	0.04	0.90	0.51	9.14
1896	5.62	0.00	1.42	1.45	0.38	0.00	0.35	T.	0.31	1.95	4.16	1.01	16.65
1897	1.60	2.46	2.03	0.00	0.11	0.08	0.00	0.00	0.00	0.86	0.13	0.75	8.02
1898	0.53	0.58	0.68	0.00	0.65	0.00	0.00	0.00	0.12	0.39	0.20	0.89	4.04
1899	2.37	0.00	3.17	0.20	0.50	0.00	0.00	0.00	0.00	1.50	2.31	0.88	10.93
1900	1.77	0.00	0.55	1.09	2.04	0.00	0.00	0.00	0.65	0.10	4.88	1.38	11.96
Mean (12 years)	1.98	1.07	1.54	0.67	0.66	0.09	0.03	T.	0.23	0.83	1.89	2.09	10.59

WHEATLAND, YUBA COUNTY.

[Elevation, 84 feet.]

1888	4.13	1.06	2.42	0.16	0.38	0.35	0.02	0.00	0.32	0.00	2.69	5.06	16.59
1889	0.12	0.37	5.52	0.80	1.98	0.32	0.00	0.00	0.00	6.41	3.16	7.51	26.19
1890	4.75	4.17	4.45	1.40	1.84	0.00	0.00	0.00	1.01	0.00	0.00	2.19	19.81
1891	0.52	5.72	1.41	1.72	2.10	0.16	0.08	0.00	0.02	0.14	0.75	3.14	15.76
1892	3.12	2.55	4.16	2.29	2.96	0.00	0.00	0.00	0.07	1.04	5.81	4.32	26.32
1893	3.16	3.17	3.90	1.14	0.72	0.00	0.00	0.00	0.46	0.28	2.82	1.85	17.50
1894	5.71	3.82	1.09	0.66	2.58	0.85	0.00	0.14	0.47	1.62	0.77	10.75	28.46
1895	8.95	2.06	1.63	1.34	1.29	0.00	0.05	0.00	2.68	0 10	1.59	1.51	21.15
1896	8.54	0.29	2.37	6.21	1.14	0.00	0.00	0.28	1.12	1.18	4 91	2.40	28.44
1897	3.13	5.00	1.78	0.92	0.26	0.24	0.00	0.01	0.12	2.23	1.64	1.89	17.22
1898	0.85	4.25	0.02	0.24	1.03	0.17	0.00	0.00	0.27	0.84	1.35	1.78	10.80
1899	4.38	0.10	5.45	0.29	1.08	0.29	0.00	0.14	0.00	5.73	4.26	3.83	25.55
1900	4.67	0.69	1.90	1.58	2.18	T.	T.	0.00	0.11	2.19	3.98	1.66	18.96
Mean (13 years)	4.00	2.56	2.78	1.44	1.50	0.18	0.01	0.04	0.51	1.67	2.59	3.68	20.98

WHITTIER, LOS ANGELES COUNTY.

[Elevation, 239 feet.]

1889	0.15	0.28	3.65	0.15	0.93	0.00	0.00	0.95	0.00	3.21	1.39	[1.78]	12.49
1890	5.13	1.58	0.50	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.15	1.60	9.15
1891	0.00	8.37	0.40	0.85	0.30	0.00	0.00	0.00	0.00	0.00	0.00	1.50	11.42
1892	0.90	2.15	2.25	0.21	1.69	0.00	0.00	0.00	0.00	0.11	1.40	2.87	11.58
1893	3.25	2.43	7.35	0.23	0.20	0.00	0.00	0.00	0.00	1.00	0.20	2.36	17.02
1894	0.65	0.55	0.63	0.10	0.00	0.00	0.00	0.00	T.	T.	0.00	5.03	6.96
1895	6.71	0.77	3.30	0.43	0.33	0.00	0.00	0.00	0.00	0.00	0.89	0.39	12.82
1896	3.37	0.00	3.60	0.01	0.00	0.00	0.00	0.00	0.00	1.45	2.85	1.52	12.80
1897	4.13	4.90	3.57	0.00	0.00	0.00	0.00	0.00	0.00	3.50	0.00	0.00	16.10
1898	1.10	0.30	1.41	0.18	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	5.96
1899	3.45	0.10	1.84	0.24	0.05	0.70	0.00	0.00	0.00	1.45	1.05	0.96	9.84
1900	1.75	0.00	1.20	0.48	2.20	0.00	0.00	0.00	0.00	0.00	8.00	0.00	13.63
Mean (12 years)	2.55	1.79	2.48	0.24	0.66	0.06	0.00	0.08	0.02	0.89	1.33	1.56	11.65

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

WILLIAMS, COLUSA COUNTY.

[Elevation, 89 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877	2.16	1.15	0.83	0.05	0.25	T.	T.	0.00	0.00	0.82	0.98	0.82	6.51
1878	8.79	6.75	2.29	0.64	0.50	0.00	0.00	T.	0.11	0.37	0.73	0.00	20.18
1879	1.80	1.43	2.37	1.48	0.85	0.13	0.00	0.06	0.00	0.13	2.31	2.81	13.37
1880	0.78	0.77	0.43	3.67	0.82	0.00	0.00	0.00	0.00	0.00	0.00	7.48	13.95
1881	4.02	1.15	0.50	1.65	0.17	0.20	0.03	0.00	0.37	0.58	0.08	1.95	10.70
1882	1.32	1.37	1.21	1.15	0.05	0.17	0.00	0.00	0.20	1.13	2.43	0.33	9.36
1883	0.73	0.18	1.29	0.38	1.75	0.00	0.00	0.00	0.50	0.20	0.05	0.15	5.23
1884	3.01	1.33	3.93	1.96	T.	2.96	0.00	0.00	0.33	0.45	0.00	4.27	18.24
1885	1.38	0.53	0.15	1.26	0.00	0.20	0.00	0.00	0.08	0.70	6.51	3.10	13.91
1886	3.83	0.00	0.89	3.01	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.95	9.28
1887	0.35	4.35	1.30	1.36	0.00	1.18	0.00	0.00	0.00	0.00	0.68	1.31	10.53
1888	2.22	0.70	1.72	0.00	0.67	0.08	0.04	0.00	0.50	0.00	4.10	2.67	12.70
1889	0.32	0.50	3.42	0.15	0.95	0.05	0.00	0.00	[0.30]	4.00	1.80	7.50	18.99
1890	3.20	2.90	3.30	0.65	1.77	0.00	0.00	0.00	0.75	0.00	0.00	1.79	14.36
1891	0.24	9.62	0.35	1.44	0.30	0.12	0.00	0.00	0.00	0.00	0.15	2.05	14.27
1892	2.33	1.34	1.54	1.10	1.74	0.00	0.00	0.00	0.00	0.00	0.00	2.44	10.49
1893	3.07	2.80	3.66	0.60	1.14	0.00	0.00	0.00	0.19	0.08	1.02	0.63	13.19
1894	3.27	1.07	0.86	0.15	1.59	0.60	0.00	0.00	1.18	0.91	0.18	7.27	17.08
1895	6.32	1.28	1.34	0.75	0.13	0.00	T.	0.00	0.88	0.13	1.25	1.01	13.09
1896	7.47	0.18	1.65	2.90	0.36	0.00	T.	1.10	0.70	0.55	2.14	4.10	21.15
1897	2.90	2.74	1.48	0.25	0.20	0.31	0.00	0.00	T.	1.27	0.52	0.85	10.52
1898	0.35	2.32	0.00	0.20	0.90	0.00	0.00	0.00	0.48	0.48	0.20	0.94	5.87
1899	4.77	0.00	3.38	0.22	0.15	T.	0.00	0.00	0.00	3.28	2.67	3.01	17.48
1900	2.24	0.20	0.80	1.13	0.58	0.05	0.00	0.00	T.	0.61	2.58	0.77	8.96
Mean (24 years)	2.79	1.86	1.59	1.09	0.62	0.25	T.	0.05	0.28	0.68	1.26	2.43	12.89

WILLOWS, GLENN COUNTY.

[Elevation, 136 feet.]

1879	1.68	0.88	1.16	1.35	0.56	0.08	0.02	0.05	0.00	0.05	3.07	4.55	13.40
1880	0.63	0.60	0.74	3.83	0.42	0.00	0.00	0.00	0.00	0.00	0.10	6.33	12.65
1881	3.75	1.12	0.56	1.64	0.17	0.18	0.00	0.00	0.44	0.47	0.10	2.23	10.66
1882	0.67	2.00	1.47	0.63	0.00	0.27	0.00	0.00	0.00	1.10	2.30	0.49	8.93
1883	0.43	0.23	1.40	0.86	1.64	0.00	0.00	0.00	0.41	1.30	0.15	0.05	6.47
1884	5.42	3.11	4.80	2.58	0.12	0.90	0.00	0.00	0.13	0.69	0.00	4.18	21.93
1885	1.19	0.24	0.05	0.94	0.20	0.18	0.00	0.00	0.30	0.30	7.28	3.37	14.05
1886	4.04	1.36	0.35	2.45	0.00	0.00	0.00	0.00	0.00	0.00	T.	1.19	9.39
1887	0.17	2.77	1.16	2.78	0.00	0.00	0.00	0.00	0.00	0.00	0.95	2.17	10.00
1888	2.99	1.38	1.82	0.08	0.24	0.29	0.00	0.10	0.10	0.00	2.43	3.61	13.04
1889	0.54	0.66	1.58	0.27	0.71	0.30	0.00	0.00	0.00	6.83	2.30	8.52	21.71
1890	5.36	1.98	3.85	0.55	0.55	0.00	0.00	0.00	0.00	0.88	0.00	3.45	16.62
1891	0.67	9.03	0.96	1.88	1.99	0.05	0.00	0.00	0.04	0.24	0.51	3.59	18.96
1892	3.45	3.20	2.98	1.71	2.95	0.20	0.00	0.00	0.00	0.55	5.75	6.45	27.19
1893	4.80	4.30	4.05	0.95	0.45	0.00	0.00	0.00	0.14	0.00	2.40	0.98	18.07
1894	3.65	0.95	1.03	0.40	1.10	0.80	0.00	0.00	0.75	0.98	0.07	9.39	19.12
1895	9.97	1.65	1.55	0.90	0.78	0.00	0.08	0.08	1.21	1.29	2.48	0.82	20.81
1896	9.96	0.10	2.06	3.22	0.88	0.00	0.00	0.62	0.75	0.85	2.55	5.19	26.18
1897	2.81	4.26	0.62	0.47	0.40	0.30	0.00	0.00	0.00	0.98	0.54	0.47	10.85
1898	0.70	2.46	T.	0.26	1.17	T.	0.00	0.00	0.36	0.70	0.30	0.99	6.94
1899	6.56	0.00	3.20	0.50	0.20	0.24	0.00	T.	0.00	2.40	3.31	2.74	19.15
1900	2.95	0.15	1.10	1.33	1.15	0.10	0.00	0.00	T.	2.13	4.37	1.00	14.28
Mean (22 years)	3.29	1.93	1.66	1.34	0.72	0.18	T.	0.04	0.21	0.99	1.86	3.26	15.47

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

WINTERS, YOLO COUNTY.

[Elevation, 136 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1889	0.36	0.50	8.40	0.58	1.92	0.15	0.00	0.00	0.00	5.95	4.58	12.74	35.18
1890	12.17	5.03	4.63	0.97	1.48	0.00	0.00	0.00	0.23	0.00	0.00	3.71	28.22
1891	0.00	13.52	1.10	2.05	0.75	0.30	0.00	0.00	0.50	0.00	0.34	3.57	22.13
1892	2.77	3.13	1.89	0.82	2.08	0.00	0.00	0.00	0.00	0.61	0.00	13.68	24.98
1893	4.47	3.87	4.93	0.93	0.37	0.00	0.00	0.00	0.00	0.03	2.07	2.02	18.69
1894	8.07	3.53	0.73	0.60	1.20	0.00	0.00	0.00	0.85	1.39	0.44	14.70	31.51
1895	13.37	1.95	1.26	1.38	0.92	0.00	0.00	0.00	1.04	0.00	1.85	0.86	22.63
1896	14.81	0.25	3.26	5.69	0.50	0.00	0.00	0.58	0.07	0.41	3.50	2.60	31.67
1897	6.59	5.54	3.96	0.02	0.00	0.00	0.00	0.00	0.00	1.55	0.02	1.76	19.44
1898	0.40	2.59	0.00	0.26	1.45	0.00	0.00	0.00	0.42	1.20	0.29	1.35	7.96
1899	6.81	2.59	4.98	0.69	0.76	0.28	0.00	0.04	0.00	2.32	2.43	3.02	23.92
1900	4.87	0.38	1.23	0.97	0.75	0.00	0.00	0.00	0.00	0.41	6.18	1.46	16.25
Mean (12 years)	6.22	3.57	3.03	1.25	1.02	0.06	0.00	0.05	0.26	1.16	1.81	5.12	23.55

WIRE BRIDGE, PLACER COUNTY.

[Elevation, 565 feet.]

1894	9.18	9.07	2.19	1.27	2.65	1.02	0.00	T.	0.74	2.60	1.17	13.31	43.20
1895	14.44	3.15	3.34	3.46	2.21	0.00	T.	0.25	1.81	0.14	1.27	2.74	32.81
1896	11.40	0.58	6.38	8.00	2.46	0.00	0.30	0.18	0.91	1.04	8.75	3.04	43.04
1897	2.20	9.96	7.13	1.60	0.17	0.28	0.00	0.10	0.29	2.43	2.47	3.26	29.89
1898	1.17	6.58	0.40	0.48	2.09	0.88	0.00	0.00	0.60	1.90	3.47	2.63	20.20
1899	6.22	0.20	13.18	0.55	1.34	1.30	0.00	0.12	0.00	6.53	8.32	6.06	43.82
1900	5.22	1.68	4.82	3.44	2.34	T.	0.00	0.00	0.43	4.00	5.87	1.95	29.75
Mean (7 years)	7.12	4.46	5.35	2.69	1.89	0.50	0.04	0.09	0.68	2.66	4.47	4.71	34.67

WOODLAND, YOLO COUNTY.

[Elevation, 68 feet.]

1873	1.25	2.84	0.56	0.18	0.00	0.00	0.00	0.00	0.00	0.20	1.15	10.44	16.62
1874	5.99	1.33	2.85	0.64	0.40	0.00	0.00	0.00	0.00	3.26	2.79	0.16	17.42
1875	5.22	0.35	0.66	0.00	0.15	1.59	0.00	0.00	0.00	0.44	3.87	2.49	14.77
1876	4.40	4.85	4.24	1.40	0.45	0.00	0.16	0.00	0.17	3.37	0.27	0.00	19.31
1877	3.95	1.42	0.77	0.03	0.53	0.00	0.00	0.00	0.00	0.94	1.10	1.29	10.03
1878	11.52	7.61	2.30	1.25	0.68	0.00	0.00	0.00	0.25	0.34	0.88	0.01	24.84
1879	2.62	3.25	4.48	2.40	1.70	0.00	0.00	0.00	0.00	0.22	7.15	3.66	25.48
1880	1.33	1.22	0.97	6.84	0.28	0.00	0.00	0.00	0.00	0.00	0.00	8.73	19.37
1881	4.50	1.93	0.97	1.39	0.00	0.35	0.00	0.00	0.50	0.25	1.87	2.37	14.13
1882	1.24	1.87	2.34	1.51	0.03	0.07	0.00	0.00	0.82	2.04	2.42	1.05	13.39
1883	0.91	0.60	3.24	1.22	4.65	0.00	0.00	0.00	0.54	1.04	0.30	0.54	13.04
1884	3.67	4.07	6.53	4.03	0.00	3.02	0.00	0.00	0.22	1.61	0.00	5.57	28.72
1885	1.62	0.15	0.15	1.50	0.00	0.00	0.00	0.00	0.06	0.05	8.70	2.73	14.96
1886	5.81	0.00	1.71	4.14	0.00	0.00	0.00	0.00	0.00	0.59	0.00	1.39	13.64
1887	0.88	7.56	0.75	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.60	3.67	15.36
1888	3.88	0.97	2.80	0.10	0.77	0.00	0.00	0.00	0.56	0.00	6.25	4.51	19.84
1889	0.19	0.49	6.14	0.84	2.01	0.43	0.00	0.00	0.00	5.54	3.54	8.16	27.34
1890	5.10	2.40	3.35	1.00	1.60	0.00	0.00	0.00	0.60	0.00	0.00	2.35	16.40
1891	0.82	8.08	0.35	1.17	0.43	0.00	0.00	0.00	0.00	0.00	0.40	3.10	14.35
1892	2.05	2.73	2.14	1.28	2.22	0.00	0.00	0.00	0.00	0.57	5.47	6.10	22.56
1893	2.88	2.78	2.00	0.62	0.61	0.00	0.00	0.00	0.00	0.08	1.71	1.80	12.48
1894	3.99	2.00	0.80	0.33	1.45	0.64	0.00	0.00	0.82	1.01	0.85	10.69	22.58
1895	9.63	1.18	0.83	0.47	0.40	0.00	0.00	0.00	1.33	0.00	1.56	0.87	16.27
1896	11.40	T.	2.37	6.48	0.64	0.00	0.00	0.36	0.44	1.27	3.74	1.78	28.48
1897	3.10	4.85	2.18	0.19	0.00	0.00	0.00	0.00	T.	1.69	0.58	0.00	12.59
1898	0.41	2.08	0.00	0.23	1.23	0.21	0.00	0.00	0.35	1.08	0.52	1.57	7.68
1899	5.02	0.00	4.87	0.26	0.50	0.98	0.00	0.00	0.00	3.55	3.29	3.45	21.92
1900	2.14	0.40	1.20	0.96	0.54	0.00	0.00	0.00	0.00	1.46	5.17	1.22	13.09
Mean (28 years)	3.77	2.39	2.20	1.51	0.76	0.26	0.01	0.01	0.24	1.09	2.29	3.20	17.74

PRECIPITATION OF CALIFORNIA (INCHES AND HUNDREDTHS)—Continued.

YREKA, SISKIYOU COUNTY.

[Elevation, 2,635 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1872	3.88	1.91	1.67	0.24	0.44	0.00	0.14	0.00	0.25	1.55	1.43	3.72	15.18
1873	1.28	1.77	0.40	0.90	0.60	0.00	0.00	0.00	0.44	0.55	1.17	2.20	9.31
1874	3.78	1.62	1.49	0.74	0.34	0.44	0.00	0.00	0.00	1.29	2.16	0.00	11.86
1875	4.35	0.19	1.23	0.17	0.51	0.30	0.07	0.00	0.00	3.34	5.29	6.07	21.52
1876	2.00	1.93	2.07	0.42	0.65	0.20	0.32	0.19	0.90	3.05	0.43	0.26	12.42
1877	1.20	3.24	1.48	0.74	1.56	0.65	0.18	0.00	0.00	0.20	3.64	0.95	13.84
1878	6.12	3.91	2.80	0.37	0.56	0.00	0.35	0.40	0.45	0.25	1.15	0.45	16.81
1879	1.53	1.41	3.96	1.56	1.42	0.39	0.22	0.15	0.00	0.77	2.32	7.23	20.96
1880	2.43	0.61	1.20	2.23	0.41	0.00	0.15	0.00	0.00	0.13	0.10	2.42	9.68
1881	11.78	2.58	0.19	1.48	0.00	1.65	0 59	0.26	0.30	3.24	0.68	1.60	24.35
1882	1.81	1.96	0.42	1.20	1.02	0.00	0.00	0.00	0.90	1.88	1.89	2.09	13.17
1883	1.38	0.47	0.53	1.26	1.76	0.00	0.33	0.25	0.33	1.35	0.66	2.95	11.27
1884	2.10	1.20	2.44	1.41	1.40	1.78	1.33	0.51	0.33	0.00	0.79	6.19	19.48
1885	1.16	2.94	0.00	1.12	3.65	1.66	0.58	0.00	0.49	0.29	6.98	2.10	20.97
1886	4.03	0.91	0.74	1.78	1.05	0.00	1.51	0.15	0.00	1.69	0.30	4.14	16.30
1887	3.21	3.01	0.41	2.35	1.42	0.84	1.28	0.31	0.21	0.00	1.04	1.99	16.07
1888	4.90	1.19	1.16	0.11	1.12	2.39	0.24	0.00	0.87	0.84	1.13	0.00	13.45
1889	1.30	1.30	2.12	1.32	1.70	0.10	0.94	0.00	0.00	3.53	2.23	4.08	18.62
1890[a]													
1891	0.45	3.59	1.15	0.93	1.48	1.36	0.41	0.00	0.82	0.43	2.50	3.92	17.04
1892	1.65	0.15	1.02	[1.06]	[1.29]	0.87	0.31	0.00	0.61	0.05	3.37	3.64	14.02
1893	1.20	2.53	1.53	2.10	0.87	0.32	0.58	0.08	1.12	0.54	7.83	2.11	20.81
1894	7.50	3.22	3.32	0.10	3.31	0.70	0.77	0.41	0.01	1.60	0.57	5.40	27.00
1895	5.30	1.03	2.26	0.81	1.59	0.00	0.43	0.68	0.82	T.	0.86	4.31	18.09
1896	7.37	1.08	1.89	2.28	2.75	0.81	0.73	1.01	0.52	0.89	5.02	3.70	28.05
1897	0.42	3.89	2.18	0.39	0.58	1.51	0.00	0.20	0.12	0.68	2.94	3.76	16.67
1898	0.83	1.44	0.42	0.48	2.08	0.10	0.02	0.05	0.14	0.51	2.74	1.04	9.85
1899	2.75	1.95	1.77	0.21	0.62	0.61	0.03	0.12	0.07	2.34	5.00	3.80	19.27
1900	1.35	2.13	1.12	0.42	0.37	1.36	0.00	1.35	0.43	3.66	2.00	3.23	17.42
Mean (28 years)	3.11	1.90	1.46	1.01	1.24	0.64	0.41	0.22	0.36	1.22	2.36	2.98	16.91

YUBA CITY, SUTTER COUNTY.

[Elevation 70 feet.]

1892	3.28	3.48	3.54	1.91	3.03	T.	0.00	T.	0.20	1.17	6.75	5.52	28.88
1893	2.99	3.22	3.75	1.01	1.07	0.00	0.00	0.00	0.31	0.25	2.49	2.19	17.28
1894	4.95	2.32	0.89	0.46	2.26	0.70	T.	0.00	0.80	1.99	0.86	11.15	26.38
1895	9.58	1.75	1.12	1.00	0.58	0.00	T.	T.	2.79	0.06	1.85	1.25	19.98
1896	10.07	0.32	2.21	5.69	0.90	T.	T.	0.80	0.97	0.76	5.43	2.71	29.36
1897	4.94	4.13	2.10	1.00	0.42	0.07	0.00	0.03	0.23	2.23	1.30	1.78	18.23
1898	0.66	4.36	T.	0.35	1.47	0.00	0.00	0.00	0.41	0.50	0.92	1.42	10.09
1899	5.07	0.11	6.67	0.63	1.54	0.43	0.00	0.18	0.00	4.42	4.82	3.62	27.49
1900	5.20	0.45	1.91	2.67	1.06	0.16	0.00	0.10	0.10	2.17	4.27	1.71	19.80
Mean (9 years)	5.19	2.24	2.47	1.64	1.37	0.15	T.	0.07	0.65	1.51	3.19	3.48	21.94

[a] No data.

SNOWFALL.

At the beginning of the year 1901 the weather bureau office at San Francisco made an effort to collect reports concerning the amount of snowfall in the mountains chiefly for the purpose of affording some data upon which forecasts of the probable supply of water available for irrigating, mining, and other purposes might be based. Not for many years had the snowfall been so heavy in central and southern California as during the winter of 1900–1901 and the outlook for an abundant supply of water so promising. It does not necessarily follow that a winter of heavy snowfall is succeeded by a season of bountiful water supply. In some States it has been found that dry ground absorbs so large a proportion of snowfall under certain favorable conditions that the anticipated run-off is not reached. Again, the melting of the snow may not occur rapidly enough and the evaporation prove excessive, especially if high north winds or mountain winds of the "Chinook" type prevail. Finally the manner in which the snow packs as it falls will determine largely the rate of flow during the ensuing warm months. During the month of February, 1901, the snowfall generally in the mountains of California was heavy. Particularly in the southern half of the Sierra Nevada and Sierra Madre was this the case. The following forecast was made at the close of February and was amply verified:

There is every prospect of an abundant supply of water during the coming spring and summer months. In the mountains of the central and southern portions of the State there is stored a sufficient quantity of well-packed snow, probably in excess of the amounts for any season for four or five years past. In northern California, while there will be an ample supply of water, the snowfall has not been as heavy as might have been expected during the wet winter.

Following are the notes made by different observers who were kind enough to make snowfall reports:

JANUARY, 1901.

NORTHERN CALIFORNIA.

Bear Valley (near Emigrant Gap).—Snowfall heavier than last year, but considerably less than average. The weather has been too warm for snow, but have had plenty of rain. Until four years ago the snowfall was from 8 to 14 feet on a level, but since then it has not been more than 4 feet. (James Rose.)

Bodie.—Snowfall last season, to January 26, 42 inches; this season, to same date, 139 inches. (Benjamin Robinson.)

Edmanton (Meadow Valley).—Average snowfall, 70 inches; this season, to January 26, 136 inches; last season, to same date, 47 inches; total precipitation this season, same date, 50.34 inches; last season, 51.35 inches. (J. A. Edman.)

Greenville.—Average snowfall, about 36 inches; this season, to January 3, 43 inches. The snow is melting slowly and will be of much benefit to crops. (C. H. Higbie.)

Iowa Hill.—The snowfall in 1890 was about 100 inches. It has been decreasing every season; last season, 8 inches. (C. F. Macy.)

Laporte.—Snowfall last January, 98 inches; this year, to January 26, 94.5 inches. The average snowfall from July 1 to June 31, for five seasons, is 288 inches. The average January snowfall is 76 inches. (C. W. Hendel.)

North Bloomfield.—The supply of water is probably not greater than last season, but depends upon February and March storms. Average snowfall, about 24 inches; above timber line, 84 inches. (L. L. Myers.)

North San Juan.—Average snowfall, 2 to 3 inches; at timber line, 6 to 8 feet; above timber line, 10 to 14 feet. (Dr. A. Fouch.)

Quincy.—Average snowfall, about 42 inches; will have best water season since 1897. (W. J. Edwards.)

Red Bluff.—More snow than usual; greater supply of water. (Maurice Connell.)

Redding.—Average snowfall, about 7 inches. In mountains to the west, snow very heavy and much above average; to the east (Sierras), much lighter. (L. F. Bassett.)

Rosewood.—Average snowfall, about 8 inches; for 1899, 22 inches; 1900, none. (C. F. Stivers.)

Shasta.—Average snowfall, 8 inches; this year above average. (Dr. T. J. Edgecomb.)

Sisson.—From appearance of surrounding mountains there is double the amount of snow to same date last year. Mount Eddy and Mount Shasta are covered and canyons are full. (C. F. Galbreath.)

Susanville.—Snowfall to January 31, 1894, 23 inches; 1895, 117 inches; 1896, 16 inches; 1897, 36 inches; 1898, 9 inches; 1899, 50 inches; 1900, 45 inches. (James Branham.)

Truckee.—Average snowfall, 95 inches; at timber line, 13 feet; above timber line, 16 feet. Snowfall for this season above average. (C. B. White.)

Yreka.—The snowfall this season, 63 inches, is greater than in any year since 1890 and the heaviest for one storm ever known. (Robert Rankin.)

COAST AND BAY SECTIONS.

Eureka.—In the mountains, at an altitude of 4,000 feet, the snow is deep. It is reported that the snowfall is unusually heavy in Trinity and Siskiyou counties. (A. H. Bell.)

Iaqua, Humboldt County.—Average snowfall; about 18 inches; this season above average. More precipitation this year than in any year since 1862. (W. E. Williams.)

Simmler, San Luis Obispo County.—No snow to date; average fall about 4 inches. Rainfall to January 26, 10 inches; total last season, 5.70 inches. (A. F. Hubbard.)

SAN JOAQUIN VALLEY.

Bigtrees, Calaveras County (elevation 4,700 feet).—Snowfall, November 19 to January 10, 50 inches; rainfall to January 11, 29 inches. (J. M. Hutchings.)

Bishop.—Snowfall more than for several years; rainfall in Owens Valley greater than usual. (W. A. Chalfant.)

Fort Tejon, Kern County.—Snowfall not above average, which is about 3 feet, and from 4 to 5 feet above timber line. (J. G. Stitt.)

Independence.—Snowfall at station, 7 inches—about double that of last year and more than average for past four years. The water supply will be very much greater than last season. (John J. McLean.)

Summerdale.—This season's snowfall (to January 31) is about 12 inches more than last season's, but less than average. The average at timber line is 3 to 4 feet and above timber line 10 to 15 feet. The rainfall has been the heaviest on record. (J. H. Lowry.)

Tehachapi.—Snowfall exceeds that of last season. Average, about 3 feet; in the higher mountains, 12 feet. (W. H. Knapp.)

Tejon Rancho, Kern County.—Creeks and springs are lower than I have known them for twenty years past. (R. M. Pogson.)

Thebe, Inyo County.—Snowfall greater than last season's. Average, about 12 inches; at timber line, probably 8 to 10 feet. (C. Kispert.)

West Point.—Snowfall about the same as last season's and considerably less than average. (T. A. Wilson.)

SOUTHERN CALIFORNIA.

Beaumont.—Snowfall greater than last season's, but less than average; at timber line the average is 15 feet. (J. W. Elder.)

Campo, San Diego County.—Snowfall exceeds last season's, but is less than average; the same is true of rainfall. (A. Campbell.)

Cuyamaca.—Average snowfall for thirteen years, 33 inches; this season (to January 26), 1 inch. Owing to heavy rains, the water supply will probably be greater than last season. (G. H. Nelson.)

North Ontario.—Average snowfall in the mountains, 8 to 12 feet; the fall exceeds last season's, and the water supply will be greater. (A. P. Harwood.)

San Jacinto.—Snowfall in the upper valley on the 27th and 28th of January, from 6 to 10 inches. (C. A. Harper.)

FEBRUARY, 1901.

NORTHERN CALIFORNIA.

Bear Valley (near Emigrant Gap).—This season's snowfall is about 75 inches greater than last season's. Snow on ground February 9, over 5 feet; February 25, 30 inches; at the summit February 10, 14 feet. Heavy warm rain reduced snow. (James Rose.)

Blue Canyon.—Very little snow left here now (February 23). The snowfall has been 4 feet greater than last season's. (J. Knapp.)

Bodie.—Snowfall greatly exceeds last season's; 48 inches on ground February 20. (Benjamin Robinson.)

Bowman's dam.—Snowfall much greater than last season's; 54 inches on ground February 28; 8 feet February 10, which was reduced by warm rains. (A. F. Hippert.)

Castle Crag.—Snow on ground February 28, 10 inches; snowfall greatly exceeds last season's. The water supply will be much greater than last season. (H. O. Wickes.)

Cedarville.—Snowfall to February 25 has been 29 inches in excess of last season's; now on ground, about 12 inches. (T. H. Johnstone.)

Dunsmuir.—Snowfall greatly exceeds that of last season; on ground February 6, 60 inches. (R. K. Montgomery.)

El Dorado.—Snow on ground February 23, 4 inches; average fall at timber line, 12 feet; above timber line, 16 feet; snowfall greatly exceeds last season's. (C. E. Deuden.)

Elder (Humboldt County).—Snowfall greater than last season's; on ground February 25, 6 inches. (William Lyons.)

Eureka.—On South Fork Mountains, 100 miles east, snow is reported 20 feet deep. Warm rains are melting snow rapidly. (A. H. Bell.)

Georgetown.—Snowfall exceeds last season's; 27 inches fell during February, but there is none on the ground now. (C. M. Fitzgerald.)

Grass Valley.—Snowfall exceeds last season's; none on ground at present. (B. F. Berriman.)

Greenville.—Eight inches of snow on ground March 1, and much heavier in timber; snowfall exceeds last season's. (C. H. Higbie.)

Lyonsville (Tehama County).—This season's snowfall, 4 feet, has been the heaviest in three years, but there is none on ground at present. (J. C. Hillhouse, P. M.)

Manton (Tehama County).—The snowfall is above average; on ground February 25, 12 inches. (W. E. Hazen.)

Markleeville.—The seasonal snowfall is more than double that of last season and the water supply will be much greater. (H. F. Musser, P. M.)

Montague.—The snowfall exceeds that of last season; on ground February 23, 42 inches. (H. A. Roterman.)

Oleta.—Snowfall this season, 4 inches, which melted the following day; last season, none. At elevations of 5,000 feet the snow has nearly all disappeared. (Isaac Cooper.)

Placerville.—More snow has fallen this winter than for many years, but there is none on ground at present. The average seasonal snowfall at timber line is 10 inches; this season, 4 feet. (J. Leigh Rowley.)

Quincy.—This season's snowfall, over 90 inches, is greater than last. On ground February 27, 12 inches. Average at timber line, 12 feet; above, 20 feet. (W. J. Edwards.)

Rosewood.—Snowfall last season, 1 inch; this season, 12½ inches; none on ground at present. At 4,000 feet elevation the average seasonal is about 3 feet; in January, this year, 6 feet. (H. F. Stivers.)

Susanville.—This is the best season since 1895; snowfall double that of last season. None on ground at present. (James Branham.)

Truckee.—Snowfall greater than last season's; on ground February 23, 9 inches; average seasonal at timber line 13 feet; above, 16 feet. (C. B. White.)

Weaverville.—Snowfall greater than last season's; none on ground here February 27; at timber line, about 3 feet; average at timber line, 8 feet; above, 10 feet. (A. S. Paulson.)

CENTRAL AND SOUTHERN CALIFORNIA.

Bishop.—The season's snowfall exceeds that of last season and the water supply will be much greater. (W. A. Chalfant.)

Independence.—Greatest seasonal snowfall to date for nine years. At 11,000 feet elevation the approximate depth February 26, is 7 feet; average seasonal at timber line, 10 feet. (John J. McLean.)

Mokelumne Hill.—Season's snowfall greater than last; 6 inches fell during February. In the mountains the fall during February was greater than for several years. Creeks and springs are full. The water supply will be much greater than last season. (C. E. Prindle.)

Summerdale.—The season's snowfall to March 1 is 18 inches more than last season's; 28 inches now on ground. The snow is packed like ice and the ground is very wet. (J. H. Lowry.)

Tehachapi.—Seasonal snowfall greater than last; on ground February 24, 12 inches. Water supply will be greater than last season. (W. H. Knapp.)

Campo.—The snowfall exceeds last season's—in the valleys February 10, 6 feet; on the 26th, over a foot on the levels, with drifts 8 to 9 feet deep. Rainfall for season, 22 inches. (A. Campbell.)

Cuyamaca.—Snowfall to February 28, 49 inches, nearly all melted. Cuyamaca Lake is now at 24-foot level; last season it reached only the 13-foot level. (G. H. Nelson.)

San Jacinto.—More snow this season than for past four years; on ground near Strawberry Valley February 25, 42 inches. (C. A. Harper.)

Snow rarely falls along the coast of California; thus at San Francisco snow has fallen only on the dates following since March 1, 1871.

DATES OF SNOWFALL IN SAN FRANCISCO SINCE MARCH 1, 1871.

January 21, 1876.—Light snow fell for 10 minutes.
December 31, 1882.—Heavy snow fell from 11.30 a. m. to 4.20 p. m.; amount, 3.5 inches.
February 6, 1883.—A few flakes of snow fell during the day.
February 7, 1884.—Snow fell at intervals during the day, depth varying from 1 to 2 inches.
February 5, 1887.—Snow fell during the day; depth at office 3.7 inches, while in the western portion of the city it was fully 7 inches deep.
January 4, 1888.—A few flakes of snow fell during the day.
January 16, 1888.—Light snow fell to the depth of 0.1 inch.
March 2, 1894.—A few flakes of snow fell during the day.
March 2, 1896.—Snow mixed with rain fell at intervals during the day.
March 3, 1896.—Heavy snow fell during the night; depth at office at 8 a. m., 1 inch.

Yet during nearly every winter snow may be seen upon the summit of Diablo, Mount Tamalpais, the Berkeley Hills, and ranges of Contra Costa County. Similarly in the southern part of the State during the months of January and February one may walk from the orange groves a comparatively short distance up the mountian sides and find snow. At Los Angeles, for example, in two or three hours one may pass from almost semitropical conditions into alpine conditions. Nearly every pronounced southeast storm during the winter months leaves a generous snowfall in the mountains of the entire State. The amount of snow varies naturally with the elevation, and also varies greatly with different storms. Heavy snow often falls on the ranges in the extreme southern portion of the State. In general the heaviest snowfall is found in the Sierra Nevada and the northern portion of the Coast Range. Elevations of from 3,500 to 5,500 feet apparently have a heavier snowfall than greater elevations.

Tables of snowfall in the Sierra for the last twenty-three years show that from 20 to 40 feet are not unusual annual snowfalls. At Summit there is a record of nearly 60 feet of snow during the year 1894. It is a matter of some difficulty to obtain reliable snowfall measurements. The ratio of 10 to 1, which is used by the Weather Bureau in reducing snow to rain, is but an approximation, and the ratio may be as large as 20 to 1 in the case of dry, fine snow at great elevation, and as small as 3 to 1 in the case of damp snow mixed with rain. A careful measurement at Fordyce, Cal., by Mr. E. E. Roeming, on February 8, 1901, showed a depth of snow as being 36 inches, but when melted it amounted to only 1.70 inches. It is plain that when the temperature is low it takes a large amount of snowfall to make an inch of water. In the case mentioned the ratio of snow to water was 21 to 1, and the writer has been told by reliable observers that in the mountains of California a ratio of 17 to 1 often prevails. On the other hand, at certain points a proper average ratio of snowfall to water would be about 6 to 1. In an article in the Monthly Weather Review for May, 1901, Mr. W. A. Bentley, of Nashville, Vt., who has made a study of snow crystals for over twenty years and has more than 800 photographs, no two alike, states that "the temperature and humidity of the air at the earth's surface is a much less important factor than is generally supposed in determining the form and size of the crystal."

Much has been learned, however, of the conditions tending to modify their forms after the nuclear form is once recognized. These conditions are chiefly the character of the cloud strata, the character of the storm and the initial and subsequent movement of the crystal within the cloud.

SNOWFALL IN THE SIERRA (IN INCHES AND TENTHS).

BOCA.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	35.7	65.0	8.5	13.0	0.0	0.0	0.0	0.0	0.5	1.5	1.8	0.0	126.0
1879	27.0	4.0	35.5	9.0	3.5	0.0	0.0	0.0	0.0	2.0	0.0	20.0	101.0
1880	.....	30.0	29.0	62.0	1.0	0.0	0.0	0.0	0.0	0.0	.....	.....	.....
1881	.....	.....	.....	0.0	.....	.....	.....	.....	.....	1.0	12.0	10.0	.....
1882	39.0	36.0	102.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	6.0	202.0
1883	3.5	22.0	7.0	9.0	6.0	0.0	0.0	0.0	0.0	13.5	5.0	6.0	72.0
1884	46.0	63.0	22.0	19.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	8.0	160.0
1885	10.0	1.0	0.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	0.5	37.5
1886	43.5	7.0	44.0	13.0	0.0	0.0	0.0	0.0	0.0	7.0	7.0	4.0	125.5
1887	16.0	127.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	27.0	191.0
1888	28.0	.....	20.0	4.0	.....	0.0	0.0	0.0	0.0	0.0	4.0	9.5	.....
1889	10.5	6.0	25.5	3.0	39.0	0.0	0.0	0.0	0.0	0.0	9.0	148.5	241.5
1890	146.0	54.0	26.0	6.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0	34.5	273.5
1891	12.5	45.0	18.0	17.0	.....	0.0	0.0	0.0	0.5	0.0	0.5	.....	.....
1892	7.0	26.0	17.0	11.0	12.0	0.0	0.0	0.0	0.0	0.0	16.0	28.0	117.0
1893	22.0	79.0	18.0	16.0	9.0	0.0	0.0	0.0	0.0	0.5	3.2	16.0	163.7
1894	46.0	75.5	0.0	10.0	0.8	0.0	0.0	0.0	0.0	0.0	5.0	118.0	255.3
1895	83.0	7.0	4.5	7.0	1.0	0.0	0.0	0.0	T.	0.0	7.0	15.5	125.0
1896	1.5	5.0	31.5	62.0	6.0	0.0	0.0	0.0	0.0	0.0	1.0	11.0	118.0
1897	22.0	63.5	83.5	1.0	0.0	0.0	0.0	0.0	0.0	3.0	5.0	15.0	193.0
1898	15.0	29.0	25.0	12.0	3.5	0.0	0.0	0.0	0.0	8.0	7.0	7.0	106.5
1899	68.0	18.5	40.0	8.0	21.5	0.0	0.0	0.0	0.0	29.0	6.0	33.0	224.0
1900	34.0	6.0	33.0	26.0	6.0	0.0	0.0	0.0	0.0	2.0	38.0	37.0	182.0

EMIGRANT GAP.

1878	95.0	123.5	17.5	27.0	0.0	0.0	0.0	0.0	0.5	5.0	1.0	6.5	276.0
1879	72.0	36.5	121.0	77.3	8.0	0.0	0.0	0.0	0.0	24.0	24.0	63.5	426.3
1880	101.0	98.8	97.5	201.0	34.2	0.0	0.0	0.0	0.0	0.0	3.0	113.5	649.0
1881	35.0	11.0	54.0	3.0	0.0	0.0	0.0	0.0	0.0	6.5	24.0	17.0	150.5
1882	55.8	94.0	166.0	26.0	1.0	0.0	0.0	0.0	6.0	60.0	21.5	30.0	460.3
1883	4.0	40.0	25.0	14.0	33.0	0.0	0.0	0.0	0.0	9.0	12.0	24.2	161.2
1884	82.2	102.0	64.0	48.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	36.8	339.0
1885	14.5	0.0	0.0	12.0	2.0	2.0	0.0	0.0	0.0	0.0	36.0	1.0	67.5
1886	63.0	16.0	69.0	75.0	0.5	0.0	0.0	0.0	0.0	15.0	4.0	6.0	148.5
1887	21.5	188.0	7.0	24.0	3.0	0.0	0.0	0.0	0.0	0.0	15.0	77.0	335.5
1888	38.0	1.0	48.0	19.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	132.0
1889	11.0	11.0	29.0	12.0	50.0	0.0	0.0	0.0	0.0	0.0	6.5	175.0	294.5
1890	169.0	98.0	68.0	14.0	14.0	0.0	0.0	0.0	0.0	2.0	0.0	44.0	409.0
1891	17.0	.....	20.0	28.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	77.0	.....
1892	41.5	15.0	57.0	12.0	35.0	2.0	0.0	0.0	0.0	3.0	70.0	24.0	259.5
1893	35.0	54.0	73.0	56.0	6.0	0.0	0.0	0.0	0.0	0.0	12.0	0.0	236.0
1894	101.0	155.0	18.0	26.0	16.0	0.0	0.0	0.0	0.0	0.0	9.0	0.0	325.0
1895	179.0	14.0	5.0	16.0	12.0	0.0	0.0	0.0	0.0	0.0	17.0	35.0	278.0
1896	14.0	T.	80.0	115.0	12.0	0.0	0.0	0.0	0.0	10.0	T.	16.0	247.0
1897	27.0	73.0	128.0	14.0	0.0	0.0	0.0	0.0	0.0	.....	10.0	.....	.....
1898	16.0	41.0	12.0	11.0	2.0	0.0	0.0	0.0	0.0	14.0	15.0	4.5	115.0
1899	105.0	25.5	106.0	30.0	12.0	0.0	0.0	0.0	0.0	10.1	12.0	47.0	347.6
1900	2.0	20.0	58.0	33.0	T.	0.0	0.0	0.0	0.0	4.0	33.0	25.0	175.0

SNOWFALL IN THE SIERRA (IN INCHES AND TENTHS)—Continued.

SUMMIT.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	100.0	115.0	30.0	24.0	16.0	0.0	0.0	0.0	4.2	12.1	8.0	6.0	315.3
1879	77.5	57.0	209.0	45.2	25.5	1.0	0.0	T.	0.0	42.0	56.0	133.0	646.2
1880	66.0	75.0	89.0	298.0	24.0	0.0	0.0	0.0	0.0	0.0	5.0	62.0	619.0
1881	45.0	16.0	15.0	10.0	0.5	0.0	0.0	0.0	6.0	26.0	30.5	43.0	192.0
1882	65.5	90.0	193.0	32.5	6.0	0.0	0.0	0.0	7.5	27.5	39.5	49.5	511.0
1883	10.0	26.0	72.0	84.0	33.0	0.0	0.0	0.0	0.0	9.5	12.0	32.0	228.5
1884	76.0	127.0	91.0	126.0	2.0	6.0	0.0	0.0	11.0	21.0	0.0	94.0	554.0
1885	14.0	5.0	1.0	38.0	10.0	8.0	0.0	0.0	0.0	0.0	136.0	30.0	242.0
1886	131.0	14.0	78.0	64.0	9.5	0.0	0.0	0.0	0.0	31.0	17.0	34.0	378.5
1887	56.0	207.0	14.0	58.0	5.0	0.0	0.0	0.0	0.0	T.	15.0	116.0	471.0
1888	92.0	7.0	80.5	21.0	4.0	9.5	0.0	0.0	0.0	0.0	16.5	39.0	269.5
1889	10.0	15.0	95.5	19.0	63.0	3.0	0.0	0.0	0.0	24.0	61.0	185.0	475.5
1890	192.0	116.0	147.0	26.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	74.0	580.0
1891	15.0	138.0	51.0	46.0	11.0	0.0	0.0	0.0	0.0	0.5	3.0	119.0	383.5
1892	40.0	34.0	74.0	45.0	63.0	2.0	0.0	0.0	0.0	6.0	88.0	95.0	447.0
1893	79.0	108.0	145.0	92.0	21.0	0.0	0.0	0.0	3.5	3.0	36.0	60.0	547.5
1894	155.0	152.5	34.0	43.0	24.0	0.0	0.0	0.0	5.0	29.0	10.0	245.0	697.5
1895	258.0	42.0	47.0	25.0	24.0	0.0	0.0	0.0	2.0	0.0	14.0	88.0	495.0
1896	105.0	7.0	97.0	182.0	54.0	0.0	0.0	0.0	4.0	9.0	123.0	41.0	622.0
1897	40.5	148.5	180.0	12.5	0.0	7.0	0.0	0.0	0.5	25.0	26.5	42.0	477.5
1898	40.0	30.0	52.0	8.0	29.0	9.0	0.0	0.0	0.0	34.0	25.0	36.0	263.0
1899	127.0	52.0	157.5	17.5	32.0	0.0	0.0	0.0	0.0	89.0	29.0	79.0	583.0
1900	41.0	38.0	79.0	42.0	9.0	0.0	0.0	0.0	1.5	21.0	60.0	15.0	306.5

TRUCKEE.

1878	46.0	110.0	16.0	8.0	0.0	0.0	0.0	0.0	1.0	2.0	8.0	5.0	196.0
1879	53.0	2.0	32.5	20.0	4.0	0.0	0.0	0.0	0.0	14.0	16.8	45.5	187.8
1880	29.5	46.5	46.5	124.0	6.5	0.0	0.0	0.0	0.0	0.0	4.5	80.0	337.5
1881	31.5	.....	18.0	3.0	0.5	0.0	0.0	0.0	2.0	5.0	27.0	20.5	.....
1882	62.0	49.5	120.5	18.5	0.0	0.0	0.0	0.0	0.0	0.0	6.0	8.0	264.5
1883	10.5	30.5	10.0	21.0	9.5	0.0	0.0	0.0	0.0	15.0	25.0	16.0	137.5
1884	66.5	112.0	44.5	37.0	0.0	0.0	0.0	1.0	0.0	4.0	0.0	24.0	289.0
1885	18.0	2.0	0.0	14.0	0.0	0.0	0.0	0.0	0.0	0.0	34.0	0.0	68.0
1886	47.0	5.0	29.0	14.0	0.0	0.0	0.0	0.0	0.0	8.5	11.0	8.0	122.5
1887	23.0	122.5	2.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	48.0	218.5
1888	23.5	0.0	31.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	73.0
1889	8.0	14.0	25.0	10.0	45.0	0.0	0.0	0.0	0.0	0.0	10.8	132.0	244.8
1890	162.0	89.0	38.0	2.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0	33.0	332.5
1891	12.2	67.2	28.0	20.5	4.0	0.0	0.0	0.0	0.0	0.0	0.0	50.2	182.1
1892	26.5	12.0	30.0	19.5	22.0	1.5	0.0	0.0	0.0	T.	27.0	23.0	161.5
1893	23.0	75.0	43.0	33.0	13.5	0.0	0.0	0.0	0.0	0.2	5.0	17.0	209.5
1894	77.0	109.5	22.5	20.0	0.0	T.	0.0	0.0	0.0	0.0	6.0	139.5	374.5
1895	107.0	16.0	15.0	5.0	10.0	0.0	0.0	0.0	0.0	0.0	5.0	29.0	187.0
1896	16.5	4.0	39.0	90.0	3.0	0.0	0.0	0.0	0.0	4.0	3.5	18.0	178.0
1897	23.5	68.0	95.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	19.5	213.0
1898	10.5	34.0	20.5	2.5	3.0	0.0	0.0	0.0	4.0	0.0	20.0	15.0	109.5
1899	78.0	27.0	54.0	0.0	0.0	0.0	0.0	0.0	0.0	56.0	13.0	18.0	246.0
1900	6.0	8.0	42.0	12.0	8.0	0.0	0.0	0.0	0.0	4.0	25.0	27.0	132.0

NORTHERN SIERRA NEVADA.

By Mr. J. A. EDMAN, E. M.

The relation of snowfall to water supply can not be predicated upon the bare statement of precipitation and depth of snow alone, as so many other factors must be taken into consideration. To refer to the reports of observers to the Weather Bureau: What does an inch of snow stand for? It may mean all the way from one-ninth to one-fourth of an inch of water. Again, the absolute water contents of the settled snow depends not alone on its depth, but its relative compactness at the time of measurement, and may vary from one-seventh to one-third of an inch of water for one inch of snow.

The only conditions in the northern part of the Sierra Nevada under which a heavy snowfall insures a steady water supply are as follows: First, early rains beginning in October and gradual enough to soak into the surface without running off in sudden floods; second, abundant snows in December and January, with occasional rains, so that the snow may settle and become compact, and freezing of the surface soil prevented; third, occasional snowstorms during February and March, and an early but not too warm spring. Heavy precipitation and snowfall under other conditions do not insure an abundant water supply, as was well illustrated during the season 1889–90, when the precipitation at Edmanton reached 137.35 inches, and the depth of solid snow on the 15th of March attained 14 feet. Elaborate computations of the precipitation for that season in the Feather River basin, in connection with a record of flow at the Golden Gate mine near Oroville, showed that only 30 per cent of the water estimated passed off by the river during the spring and summer months. In this instance the spring of 1890 was marked by a very high temperature, and the first deep snows of 1889 fell on bare and frozen ground. The general water supply during that season was but little above the average. At this altitude (4,750 feet) and section of country it takes nearly 20 inches of water to fill the surface soil and start the deeper springs running, and even more after a very hot and dry summer.

The above-mentioned facts are well illustrated by the weather conditions during the seasons 1899–1900 and 1900–1901, as will appear from the subjoined tables:

1899–1900.	Total precipitation.	Snow.	1900–1901.	Total precipitation.	Snow.
October	15.38	19.0	August and September	0.25	0
November	13.09	6.0	October	12.51	0
December	11.89	22.0	November	13.13	20.0
January	10.99	0	December	7.70	22.0
			January (to 26th)	16.75	94.0
	51.35	47.0		50.34	136.0

An inspection of the above table will show the precipitation about equal for the two seasons, but the snowfall of January, 1901, far in excess of that of the corresponding month of 1900. The table, however, does not show that the conditions precedent during this season were specially favorable in contrast with the previous season, as the storms of October, 1899, were concentrated in a few days and the water passed off rapidly in injurious floods, while the rainfall of October, 1900, was well distributed over the whole month and largely seeped into the ground. The rains of December, 1899, fell on frozen ground and largely ran off, while in December, 1900, the thoroughly saturated ground received a cover of snow, to be reenforced in January, 1901, by heavy snows, now (January 26) averaging 4 feet in depth at this station, which acted upon by the warm surface soil feeds the streams independent of the general temperature conditions. Given a fair supply of snow during February and March it is reasonable to predict a good water supply during the summer of 1901.

AT EDMANTON STATION.

By Mr. J. A. EDMAN, Voluntary Observer.

The months of February and March, 1901, present a marked contrast to each other in regard to precipitation and also in snowfall, the record being as follows:

	Precipitation (inches).	
	February.	March.
Water, measured from rain	9.47	0.68
Water, measured from snow	5.89	4.26
Total	15.36	4.94

The preponderance of rain during February is notable, as the mean temperature for the month was 35.2°, as compared with 40.1° for March. The rains of February having been almost continuous for eight days, and accompanied by strong winds and a mean temperature during the storm period of 40.3°, induced a rapid melting of the snow, and as a result the depth of snow (70 inches) at the beginning of the rainstorm was, at its close, reduced to an average of 40 inches. This reduction in the volume of the snow I have estimated as equivalent to 7 inches of water, making a run-off during a little more than ten days of 16.47 inches of water, and causing proportionate floods in the mountain streams.

The precipitation during March was much below the normal, and being mainly in snow, added 10 inches to the depth up to the 15th, which, although reenforced by a light snowstorm on the 27th, was reduced during the prevailing clear and comparatively mild weather of the latter half of the month to an average of 30 inches by the 1st of April. This depth of snow is roughly estimated, as great variation occurs according to exposure to sun and wind, many southern slopes now presenting large bare spaces, while drifts 5 feet deep may be seen on northern declivities and in sheltered spots in the canyons.

Ever since the high water of February the streams in this section of the Sierra have furnished a constant and but slightly varying water supply, which is being utilized by the miners, and which is apt to continue, and even to increase, during April and May, dependent on the temperature. The precipitation for the season, up to date, at this station, is 70.68 inches.

The depth of snow on April 1, within a radius of 6 miles from this station, may be estimated as follows: In the zone below 3,500 feet altitude, little or no snow is found. From 3,500 to 4,000 feet, but little is seen on southern exposures, but an average of 20 inches on northern slopes and in the hollows. From 4,000 to 5,000 feet, about one-half of southern exposures are bare, and the snow there remaining does not exceed 20 inches in depth, while the northern slopes average fully 35 inches in depth. From 5,000 to 6,000 feet, bare spots occur on wind-swept southern exposures to an extent of 25 per cent in area, while the average depth of the whole zone may be given at 50 inches. From 6,000 to 7,000 feet, a few bare spots occur on windy points, while over the whole zone the snow probably averages fully 70 inches in depth. Three inches of the old snow may be estimated equivalent to 1 inch of water. The rains of February extended above the 7,000 feet zone in this region. The later snows have not reached below the 3,500 feet limit.

So far the outlook for a long-continued and regular water supply within the Feather River drainage area is very promising, providing normal temperatures prevail during April and May.

CALAVERAS COUNTY.

By Mr. C. E. PRINDLE, Voluntary Observer.

The snowfall in the mountains of eastern and northern Calaveras County is several feet short of the average up to five and six years ago. The snows this winter have been light, and the rains have extended higher into the mountains than usual. The earth contains more springs and water at this date than it has for five years past. There is more water in the Calaveras River and all branches of the Mokelumne River (except the North Fork, which heads in Blue Lakes) than for several years past at this date, it being mostly rain water and not water from the snows. Dependence is not placed as much on the snowfall for a summer supply of water as in former years, for the reason that great forest fires have been so destructive to timber and undergrowth of late years that the snows do not remain on the ground long, but disappear from a month to six weeks earlier than formerly. Spring rains are more to be depended upon than snow for a summer supply of water.

Parties who have to-day returned from the higher range of mountains state that the snowfall is very light, in many localities there being none at all, where last year at this date there was 4 feet. Snow has fallen several times, but being followed by rain it did not remain long on the ground.

LAPORTE.

The following record of snowfall at Laporte, Plumas County (elevation 5,000 feet), was made by Mr. Charles W. Hendel, voluntary observer. The record shows a yearly average of 299 inches. The snowfall for January, 1901, was 96.5 inches:

Year.	Jan.	Feb.	Mar.	Apr.	May.	Oct.	Nov.	Dec.	Total.	Year.	Jan.	Feb.	Mar.	Apr.	May.	Oct.	Nov.	Dec.	Total
1895.....	176.0	17.5	43.0	24.0	19.0	0.0	28.0	43.0	350.5	1899.....	114.1	26.9	117.8	25.3	12.7	27.3	22.0	52.9	399.0
1896.....	57.0	8.0	73.0	141.0	25.5	23.0	12.0	31.0	370.5	1900.....	18.0	22.9	52.9	28.9	1.0	6.5	37.1	28.2	195.5
1897.....	45.0	90.0	111.0	18.0	0.0	19.5	6.0	16.0	305.5	Average.	72.6	37.8	69.0	41.4	10.3	15.4	20.1	30.8	299.0
1898.....	25.5	61.5	16.0	11.5	3.5	16.4	15.5	13.5	a172.9										

a Includes 7 inches in June and 2.5 in September.

CUYAMACA, 1888–1900.

By Mr. G. H. NELSON, Voluntary Observer.

Year.	Jan.	Feb.	Mar.	Apr.	May.	Oct.	Nov.	Dec.	Total.	Year.	Jan.	Feb.	Mar.	Apr.	May.	Oct.	Nov.	Dec.	Total.
1888.....	36.0	4.5	17.0	.....	.....	.....	.....	0.5	58.0	1895.....	25.5	.....	.....	.....	.....	.....	2.0	.....	27.5
1889.....	6.5	23.0	2.0	0.5	.....	.....	.....	.....	32.0	1896.....	.....	.....	48.0	.....	.....	.....	.....	.....	48.0
1890.....	14.0	38.0	.....	.....	.....	0.5	.....	.....	42.5	1897.....	.....	24.0	.....	.....	.....	.....	.....	8.0	32.0
1891.....	.....	1.5	2.0	5.0	.....	.....	.....	.....	8.5	1898.....	24.0	.....	9.0	.....	.....	.....	.....	16.0	49.0
1892.....	.....	.....	.....	.....	.....	.....	.....	1.0	1.0	1899.....	1.0	12.0	4.8	.....	.....	.....	.....	.....	17.8
1893.....	.....	12.0	36.0	.....	.....	.....	11.0	.....	59.0	1900.....	.....	.....	.....	3.0	.....	.....	.....	.....	3.0
1894.....	23.0	5.0	26.0	.....	0.5	.....	.....	.....	54.5										

Average for thirteen years, 33 inches.

PRECIPITATION AT HIGH LEVELS.

[From records of U. S. Geological Survey.]

CAMPO, SAN DIEGO COUNTY.

[Latitude, 32° 37′; longitude, 116° 30′. Elevation, 2,543 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1877	.....	.....	2.29	1.08	0.91	0.00	0.50	0.00	0.00	0.35	.....	2.44	.....
1878	1.79	5.45	1.84	5.75	0.41	0.00	2.32	0.01	0.00	0.31	0.55	1.29	19.72
1879	2.18	1.32	0.60	2.01	0.00	0.00	0.00	0.00	0.00	0.00	3.00	2.23	11.34
1880	3.00	2.15	3.56	4.00	0.00	0.00	0.12	0.41	0.01	0.68	0.85	4.85	19.63
1881	1.74	0.53	5.00	1.52	0.12	0.04	0.07	1.27	0.02	0.73	0.11	0.24	11.39
1882	3.10	4.57	1.01	1.10	0.18	0.26	.....	0.53	0.02	.....	.....	.....	.....
1889	.....	4.65	4.00	.....	0.45	0.10	.....	2.50	0.50	1.10	1.67	9.34	.....
1890	2.40	7.25	1.69	.....	0.90	.....	2.26	2.67	1.80	.....	0.95	.....	.....
1891	0.00	13.30	0.50	1.20	0.75	0.00	0.00	a 16.10	0.00	0.00	0.25	[8.21]	[35.31]
1892	0.75	4.55	3.30	1.25	2.75	.....	.....	.....	.....	.....	.....	.....	.....
1893	3.55	3.65	7.19	1.54	0.41	0.00	0.00	0.00	0.57	0.11	3.38	2.08	22.48
1894	5.89	5.83	1.01	0.80	4.38	1.26	0.00	0.00	.....	.....	.....	.....	.....
1900	2.65	0.10	0.55	2.07	1.04	0.10	0.00	0.00	0.05	0.28	4.47	0.00	.....
1901	2.03	8.22	0.69	0.54	1.18	0.00	0.61	0.63	0.00	1.02	0.43	0.23	.....
Mean	2.42	4.74	2.37	1.90	0.96	0.15	0.58	1.86	0.25	0.46	1.57	2.59	19.80

CROCKERS, TUOLUMNE COUNTY.

[Latitude, 37° 48′; Longitude, 119° 53′. Elevation, 4,453 feet.]

1896	.....	.....	.....	.....	.....	.....	.....	3.10	0.14	2.30	9.16	5.41	.....
1897	6.56	15.97	21.80	1.33	0.00	0.75	0.00	0.00	0.45	6.09	2.70	3.80	59.45
1898	2.60	7.15	3.74	1.50	3.74	0.00	0.00	0.00	1.58	1.87	1.85	2.12	26.15
1899	8.32	1.00	15.89	1.50	0.15	1.65	0.00	0.00	0.00	8.10	7.45	11.38	55.54
1900	5.98	1.18	4.28	3.56	1.80	0.47	0.00	0.00	0.62	9.71	17.43	1.39	46.42
1901	16.99	15.71	3.03	6.35	3.81	0.00	0.00	0.00	3.28	4.59	3.90	2.50	60.16
Mean	9.29	8.20	9.75	2.85	1.90	0.57	0.00	0.52	1.01	5.44	7.08	4.43	50.84

CUYAMACA, SAN DIEGO COUNTY.

[Latitude, 32° 58′; longitude, 115° 35′. Elevation, 4,800 feet.]

1897	6.82	8.14	8.56	0.22	0.38	0.00	0.00	0.00	0.36	5.09	1.07	2.46	32.60
1898	5.47	1.97	4.06	1.24	5.97	0.00	0.00	1.32	0.00	0.00	0.88	0.96	21.87
1899	7.02	1.53	7.23	0.98	0.47	2.96	0.04	T.	0.00	4.51	3.45	2.49	30.68
1900	3.62	0.26	2.51	6.69	4.03	0.10	0.28	T.	0.92	0.74	11.97	0.04	31.16
1901	8.17	13.26	2.32	1.24	3.87	0.00	T.	0.09	0.08	1.94	1.48	0.52	32.97
1887	.....	.....	.....	.....	.....	.....	.....	.....	0.00	0.78	3.64	6.00	.....
1888	3.35	3.12	4.12	0.21	0.00	0.00	0.93	0.04	0.21	3.82	8.33	13.80	.....
1892	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.87	3.76	.....
1893	5.55	9.13	15.60	1.00	1.00	0.00	1.20	0.30	0.00	1.90	3.30	2.75	.....
1894	2.05	2.05	0.00	0.00	1.00	0.50	0.00	0.50	0.30	0.00	0.00	12.80	.....
1895	28.43	4.60	5.89	1.10	1.16	0.00	0.00	0.00	3.00	1.03	6.01	1.66	.....
1896	5.77	0.20	3.01	1.78	0.92	0.00	1.29	0.87	1.06	4.93	3.45	3.74	.....
Mean	4.98	4.43	5.33	1.45	1.88	0.36	0.37	0.31	0.54	2.25	3.87	4.21	29.98

DESCANSO, SAN DIEGO COUNTY.

[Latitude, 32° 50′; longitude, 116° 40′. Elevation, 3,500 feet.]

1896	2.93	0.10	8.04	1.14	0.17	0.00	0.30	1.38	0.03	2.71	2.12	2.43	21.35
1897	6.48	6.27	5.21	0.16	0.21	0.01	0.62	0.04	0.56	2.83	0.40	2.90	25.69
1898	5.28	0.89	4.11	0.90	2.35	0.00	0.15	0.83	0.00	0.00	0.35	1.00	.....
1899	3.49	1.69	2.73	0.25	1.45	.....	0.15	0.38	.....	.....	0.25	1.06	.....
1900	4.00	0.75	1.25	4.25	2.69	0.06	0.00	T.	0.25	0.63	6.50	0.15	20.53
1901	3.25	11.00	1.40	0.57	1.53	0.00	T.	0.78	T.	1.25	0.87	0.12	.....
Mean	4.24	3.45	3.79	1.21	1.40	0.01	0.20	0.57	0.17	1.48	1.75	1.28	19.55

a Cloud-burst; rain gauge washed away and record incomplete.

PRECIPITATION AT HIGH LEVELS—Continued.

HOLCOMB CREEK, SAN BERNARDINO COUNTY.

[Latitude, 34° 18′; longitude, 116° 58′. Elevation, 5,220 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1895	10.66	0.61	4.86	0.62	0.00	0.00	0.00	0.00	0.00	0.00	1.66	0.41	18.22
1896	1.56	T.	3.24	1.02	0.25	0.00	0.00	0.47	0.00	1.70	1.05	1.82	11.11
1897	3.35	7.89	3.42	0.00	0.11	0.20	0.00	0.00	0.38	3.32	.....	.....	.....
1898	3.05	0.52	1.27	0.10	1.46	0.00	0.00	0.66	0.00	0.00	0.57	0.48	8.11
1900	0.38	0.21	1.14	1.25	1.20	.....	.....	.....	.....	.....	.....	.....	.....
Mean	3.68	1.85	2.79	0.60	0.60	0.05	0.00	0.28	0.10	1.26	1.13	0.90	13.24

LITTLE BEAR VALLEY, SAN BERNARDINO COUNTY.

[Latitude, 34° 15′; longitude, 117° 10′. Elevation, 5,150 feet.]

1893	.....	.....	.....	.....	.....	.....	.....	.....	1.21	1.49	2.55	7.61	.....
1894	2.48	2.25	3.16	0.62	1.34	0.12	0.04	0.31	0.52	0.38	0.00	20.12	31.34
1895	15.27	2.01	8.82	1.31	0.00	0.00	0.00	0.00	0.00	0.00	2.65	1.75	31.81
1896	2.38	T.	4.21	1.72	0.47	0.00	0.00	0.10	0.00	2.30	1.38	1.98	14.54
1897	5.16	11.74	10.17	0.03	0.15	0.20	0.00	0.00	0.46	4.10	0.76	1.20	33.97
1898	3.80	1.38	2.49	0.25	4.56	.....	0.00	.....	.....	T.	0.62	0.74	.....
1900	1.39	0.43	3.42	3.11	4.63	.....	.....	.....	.....	.....	.....	.....	.....
Mean	5.08	2.97	5.38	1.17	1.86	0.08	0.01	0.10	0.44	1.36	1.33	5.57	25.35

MORSE'S HOUSE, SAN BERNARDINO COUNTY.

[Latitude, 34° 12′; longitude, 117° 12′. Elevation, 5,350 feet.]

1893	.....	.....	.....	.....	.....	.....	.....	.....	0.25	2.44	2.75	14.73	.....
1894	4.78	3.93	5.00	1.37	2.08	0.60	0.02	0.74	0.67	0.47	0.00	26.77	46.43
1895	18.00	5.85	12.74	2.91	0.00	0.00	0.00	0.00	0.00	0.00	4.18	3.11	46.59
1896	5.95	0.08	7.90	2.63	0.89	0.00	0.00	0.46	0.00	3.83	1.96	2.73	26.43
1897	9.34	20.14	15.61	0.15	0.18	0.40	0.00	0.00	0.73	5.08	.....	1.85	.....
1898	6.37	2.96	4.22	0.70	8.27	.....	0.08	.....	.....	0.34	0.74	1.28	.....
1900	2.20	0.44	3.83	5.81	8.64	.....	.....	.....	.....	.....	.....	.....	.....
Mean	7.77	5.57	8.22	2.26	3.34	0.25	0.02	0.30	0.33	2.03	1.98	8.41	40.43

MOUNT LOWE, LOS ANGELES COUNTY.

[Latitude, 34° 15′; longitude, 118° 07′. Elevation, 3,200 feet.]

1896	2.85	0.10	4.10	0.60	0.30	0.00	0.00	0.10	0.00	2.38	1.51	2.11	14.05
1897	6.42	7.47	6.67	0.19	0.87	0.10	0.15	0.00	0.00	2.57	0.40	0.22	25.06
1898	1.55	2.22	1.65	2.70	2.17	0.00	0.00	0.00	0.25	0.30	0.00	0.98	11.82
1899	3.29	0.00	3.40	0.20	1.90	0.40	0.00	0.00	3.00	2.85	.....	.....	.....
1900	.....	.....	2.90	2.15	4.05	0.40	T.	0.00	0.25	1.40	11.71	0.00	.....
Mean	3.53	2.45	3.74	1.17	1.86	0.18	0.03	0.02	0.10	1.90	3.40	0.83	19.21

MUTAH FLAT, LOS ANGELES COUNTY.

[Latitude, 34° 38′; longitude, 119° 03′. Elevation, 4,850 feet.]

1893	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.70	0.00	4.10	.....
1894	0.54	0.54	0.30	0.13	0.79	0.00	0.00	0.00	0.00	0.85	0.00	7.33	10.48
1895	9.80	0.78	2.95	0.00	0.00	0.00	0.00	0.00	0.00	0.65	1.60	1.10	16.88
1896	.....	0.00	4.79	3.50	0.52	0.00	0.30	0.00	0.00	1.75	1.50	2.80	.....
1897	9.10	3.50	3.59	0.00	0.00	0.00	0.30	0.00	0.00	1.75	0.00	0.15	18.39
1898	0.60	1.00	0.80	0.00	1.02	0.00	0.00	0.00	2.00	0.00	0.00	0.40	5.82
1899	2.30	0.00	2.70	0.50	0.00	0.00	0.00	0.00	0.00	2.00	1.30	2.25	.....
1900	2.80	0.00	1.95	0.40	1.80	0.00	0.00	0.00	0.00	0.00	5.00	0.00	.....
1901	7.00	4.60	0.25	1.60	0.58	0.00	0.00	0.00	0.00	2.85	0.65	0.00	.....
Mean	4.59	1.30	2.17	0.77	0.59	0.00	0.08	0.00	0.25	1.28	1.12	2.01	14.16

PRECIPITATION AT HIGH LEVELS—Continued.

PALMDALE HEAD WORKS, LOS ANGELES COUNTY.

[Latitude, 34° 25′; longitude, 118° 03′. Elevation, 3,299 feet.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1896	.....	.....	.....	.....	.....	0.00	0.25	1.35	0.32	1.42	0.43	0.98	.....
1897	3.78	3.71	1.31	0.04	0.32	0.00	0.03	1.57	T.	0.86	0.00	0.14	.....
1898	2.38	0.07	0.90	0.00	0.21	0.00	0.02	0.05	0.00	0.00	T.	0.87	.....
1899	1.00	0.31	0.97	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.27	0.32	4.15
1900	0.65	0.00	0.80	0.57	0.76	0.00	0.00	0.00	0.00	0.20	1.79	0.00	4.77
1901	1.34	4.50	0.38	0.15	T.	0.00	0.00	0.33	T.	0.32	0.04	0.00	.....
Mean	1.83	1.72	0.87	0.15	0.26	0.00	0.05	0.55	0.05	0.68	0.42	0.38	6.96

SECOND GARROTTE, TUOLUMNE COUNTY.

[Latitude, 37° 49′; longitude, 120° 12′. Elevation, 2,900 feet.]

1883	1.25	4.52	8.27	2.00	3.50	0.00	0.00	0.00	0.63	0.75	0.75	1.00	23.67
1884	8.00	14.00	16.00	9.00	1.00	1.48	0.00	0.00	0.00	2.00	0.00	18.50	59.98
1885	4.00	0.00	0.00	1.50	0.00	3.50	0.00	0.00	0.25	0.00	18.00	5.00	32.25
1886	10.00	1.00	5.50	6.25	0.50	0.00	0.00	0.00	0.00	1.00	1.75	2.75	28.75
1887	1.00	13.75	1.25	5.50	0.00	0.00	0.00	0.00	1.00	0.00	2.00	7.00	31.50
1888	7.75	1.50	3.00	1.25	1.25	0.25	0.00	0.00	0.50	0.00	5.00	4.25	24.75
1889	0.50	1.00	9.75	0.50	5.75	0.00	0.00	0.00	0.00	6.50	5.75	22.00	51.75
1890	15.00	6.75	7.25	2.00	1.75	0.00	0.00	0.25	2.27	0.00	0.00	9.00	54.27
1891	2.00	14.00	5.00	3.50	0.25	0.00	0.00	0.00	0.00	0.25	0.00	11.25	36.25
1892	2.25	3.25	7.00	2.00	6.25	0.00	0.00	0.00	0.25	1.25	10.00	8.75	41.00
1893	6.00	7.25	11.25	2.50	0.00	0.00	0.00	0.00	0.50	0.25	3.00	4.00	34.75
1894	10.50	10.75	2.25	1.25	3.75	1.00	0.00	0.00	2.00	2.00	0.50	18.00	52.00
1895	13.00	4.25	8.75	2.00	1.50	0.00	0.00	0.00	0.00	0.00	1.75	2.75	34.00
1896	12.00	0.00	5.50	7.25	0.25	0.00	0.00	2.50	0.00	3.00	6.00	4.50	41.00
1897	4.00	10.75	9.01	0.53	T.	T.	0.00	0.00	T.	2.75	1.00	2.50	30.54
1898	2.75	6.00	2.50	0.25	2.50	0.00	0.00	0.00	2.00	1.50	1.50	1.00	20.00
1899	6.75	1.00	14.00	0.50	1.00	0.00	0.00	0.00	0.00	6.75	6.75	6.00	42.75
1900	5.25	1.25	3.75	4.00	1.50	0.00	0.00	0.00	0.25	5.00	14.00	1.50	36.50
1901	11.00	17.75	1.25	4.00	1.00	0.00	0.00	0.00	2.25	2.25	2.00	2.00	33.50
Mean	6.47	6.28	5.85	2.94	1.67	0.33	0.00	0.14	0.63	1.86	4.20	6.93	37.33

UPPER LAKE,[a] VENTURA COUNTY.

[Latitude, 34° 41′; longitude, 119° 03′. Elevation, 4,900 feet.]

1891	.....	.....	.....	.....	.....	.....	.....	0.00	0.95	0.62	0.71	7.35	.....
1892	3.93	2.50	.....	2.84	3.71	0.49	0.00	0.00	T.	1.17	.....	.....	.....
1893	4.08	5.19	5.47	2.37	1.04	0.00	T.	0.00	0.85	0.47	4.83	2.82	27.12
1894	10.43	6.21	1.80	1.46	1.02	1.12	0.00	T.	0.53	2.05	1.13	11.62	37.37
1895	14.92	4.15	3.20	1.41	1.39	0.00	0.05	T.	.....	T.	.....	.....	.....
1896	11.18	0.80	2.39	6.01	2.07	0.00	T.	0.87	0.42	1.04	5.07	6.47	36.32
1897	3.45	6.35	4.58	0.42	0.22	0.97	0.05	0.00	0.08	1.67	2.38	2.61	22.78
1898	0.93	4.57	0.36	0.43	1.90	0.58	0.00	T.	0.60	1.01	1.66	1.34	13.38
1899	8.16	0.25	5.59	0.90	1.00	0.05	0.00	0.03	0.00	3.49	6.33	9.79	35.59
1900	3.98	1.31	3.53	2.13	0.81	0.35	T.	0.00	0.03	3.96	5.08	3.93	24.81
1901	6.44	4.75	1.06	2.43	0.70	0.00	T.	T.	1.11	1.09	4.35	2.09	24.02
Mean	6.75	3.61	3.11	2.04	1.39	0.36	0.01	0.09	0.46	1.51	3.50	4.22	27.05

[a] Upper Lake is also the name of a station in Lake County.

FROST.[a]

With the possible exception of the loss occasioned by insect pests, there is probably no one cause of loss so seriously affecting crops in California as frost. Notwithstanding statements sometimes published that certain areas are in the so-called frostless belt, there does not appear good reason for believing that any portion of the State may not be visited by frost.

The losses to the fruit crop, both citrus and deciduous, through frost have been so large that special attention has been given to methods of protecting orchards, and these methods are discussed in detail in the following pages. With citrus fruits the frosts of December, January, and February are to be guarded against, the fruit being ripe and ready for shipment. With deciduous fruits the late spring frosts do the damage. Almonds, apricots, grapes, peaches, and prunes are hurt while in bud, or while the fruit is just setting, by the frosts of March and April. The damage depends, in all probability, as much upon the condition of the tree as the degree and duration of the cold. For example, a sharp frost during the first or second week of April sometimes does less damage if the trees are fairly past the blossoming period than the same frosts would have caused occurring about the middle of March.

Attention is invited to the excellent table prepared by Mr. Samuel H. Gerrish, of Sacramento, giving the dates of first and last light and killing frosts, also the dates of blooming fruit trees in Sacramento from 1869 to 1901.

The protection of gardens, both vegetable and flower, is also important. The particular frosts affecting gardens are the frosts of February, March, and April, and it is pointed out in the succeeding pages that the same general principles used to protect orchards should be followed in the protection of gardens. A clear, still night following thirty-six or forty-eight hours of boisterous north wind is likely to be followed by frost, particularly if the movement of the air in the given locality has been such as to cause a settling of cold, relatively dry air strata in the hollows or depressions of the land. The formation of frost is essentially a problem in air drainage, and if by any means we can prevent streaks, pools, or basins of stagnant, cold, dry air we can largely prevent frost. Frost is the water vapor of the air deposited upon the plant at a temperature below 32° F. The damage to plant life is caused by the falling temperature. The water vapor plays the part of an index only. Indeed, the action of the water vapor is preventive. Dry air at a temperature of 32° F. weighs 563 grains per cubic foot. Vapor of water at 32° F. weighs 2.1 grains per cubic foot at a saturation of 100 per cent. Air at a temperature of 25° F. weighs 572 grains per cubic foot. Given a little time, therefore, on a still, clear night the loss of heat by radiation from the plant surfaces and the ground will bring about a settling of the colder air to the bottom. The ground will be covered with frost, while thermometers 6 feet above the ground will record 34° or 35° F. Vegetables and flowers, therefore, unless grown upon sloping or terraced ground, are at a decided disadvantage compared with tree fruit in the matter of frosts.

NATURE OF FROST.

It can not be emphasized too clearly that it is the low temperature and not the solidification of the water which does the damage. If there be but little vapor in the air there will be but a light frost apparent, and yet the temperature may be so low as to cause great injury. The so-called hard, dry frost, also called black frost, does, as is well known, even more injury than

[a] Since this article was written a number of orchard-heating devices have been patented by various frost prevention companies in California. Oil fire pots have been tested and it is claimed given very satisfactory results. Gravity oil distillate is used as fuel and about eighty oil pots to the acre will insure protection.

heavy frosts. Water vapor at 25° F. completely saturated weighs 1.6 grains per cubic foot. In the fall from 32° to 25° nearly half a grain per cubic foot, if the saturation were 100 per cent, would be condensed, appearing in visible form as a frost flake. A certain amount of heat was given off in the transformation of this invisible water vapor into ice, and an exactly equal amount of heat (known as the latent heat of vaporization) will be in turn required to change this frost flake back into vapor. We give special attention to this point because it would appear theoretically that the secret of successful protection of garden truck and delicate flowers will be found in this action of water, both in setting free heat at the time when the temperature is falling, and on the other hand in using up heat and thus acting as a retard or brake when the temperature begins to rise quickly.

It is now quite generally believed that as much injury results from the sudden warming up of the dormant and thoroughly chilled flower or vegetable as from the chilling itself. In the work of protecting fruits from frost it has been found very necessary to interpose some screen early in the morning between the sun's rays and the frosted fruit. With flowers and garden truck this can be much more easily accomplished than with fruit. In this respect the gardener has a decided advantage over the orchardist. The following is an excellent statement of how the plant is injured:

HOW FROST INJURES PLANTS.

Low temperature congeals the watery part of the cell sap and also the intercellular water content of the plant. Within certain limits this is not or may not be injurious, providing the protoplastic contents of the cell are able to absorb the water and do this before the cell structure collapses as a result of insufficient cell turgor. Frequently the frosting of plants is followed by a sudden rising of temperature, in which case much of the water which was part of the cell sap in the normal condition of the plant escapes through the cell wall into intercellular spaces, or even from the plant entirely, and thus, the protoplasm of the cell being unable to assume its normal condition, becomes disorganized and decomposition follows. (Prof. E. R. Lake in the Oregon climate and crop bulletin, July, 1900.)

PROTECTION OF ORCHARDS FROM FROST.

During the past five years the Weather Bureau office at San Francisco has been called upon to give particular attention to the problem of lessening the injury to fruits by frost. By direction of the Chief of the Weather Bureau, during the year 1900 the forecast official for the southern half of the Pacific slope made an extensive journey through California with the special purpose of studying the methods of protecting deciduous fruits from frost. This journey was the natural outgrowth of the excellent work inaugurated by Mr. W. H. Hammon, formerly professor in the Weather Bureau, while in charge of the San Francisco office. During the years 1897, 1898, and 1899 the unusually dry winter conditions, with frequent and prolonged frosts and lower temperatures than had been previously reported in many of the chief fruit-growing centers of southern California, made it imperative that some steps should be taken to minimize the injury to citrus fruits by frost. The problem as presented to the forecast official was of a twofold nature: First, a study of the conditions preceding frost, so that he might with reasonable certainty give timely warning to the fruit growers; second, a study of the methods, means, and devices for protecting fruit from injury by low temperatures. The first has been solved with a fair measure of success. In the second problem the Weather Bureau had the valuable assistance of certain practical fruit growers, who willingly and readily tested the various devices proposed for smudging and cheerfully gave this office the benefit of the many practical experiments made by them in smudging, irrigating, heating, and covering. A bulletin on frost fighting, by Alexander G. McAdie (Bulletin No. 29), was issued on March 13, 1900, and nearly 3,000 copies distributed to those most interested in fruit growing. A previous bulletin (No. 23) upon frost, when to expect it and how to lessen the injury therefrom, by Prof. W. H. Hammon, had been issued on November 10, 1898, while a Farmers' Bulletin, No. 104, by Prof. E. B. Garriott, Notes on Frost, was issued June 15, 1899, which treated of frost protection in general.

It has become evident in California that the fruit grower must possess a degree of intelligence certainly as high as is demanded in any one of the usual vocations of life. The successful

orchardist must be a skilled farmer and a good business man and, at the same time, be familiar with the chief principles of modern science. He must be chemist, entomologist, and physicist, as well as fruit grower. In the matter of protecting his crops from frost, for example, he must know exactly what method is best suited for his crop, for the locality, and for the season, and be prepared to act promptly, or else the greater portion of the year's profits will vanish in the course of a few hours.

In what follows extensive use will be made of Bulletin No. 29, since experience has shown that the principles of frost fighting laid down therein are essentially correct. While this bulletin was written chiefly with a view of protecting the citrus fruit crops of California, particularly of the section south of the Tehachapi, from frost, the principles hold, as a general rule, for the protection of deciduous fruits also.

In October and November, 1900, an attempt was made to extend the benefits of the Weather Bureau work in connection with frost to the fruit growers of central and northern California, particularly to the growers of almonds, apricots, peaches, prunes, pears, apples, grapes, and figs. Many fruit ranches were visited, and the details of losses by frost gathered from ranch superintendents and others, together with all data available relative to the exposure of the fruit, the lay of the land, and the lowest temperatures. The following facts stand out prominently from the general mass of statements. First, that in California the greatest injury is done deciduous fruits by the late spring frosts occurring as late as the 23d of May, when fruit is well formed, frequently resulting in the loss of three-fourths of the crop in the case of the more tender fruits, as for example, almonds and apricots. Second, in all the fruit ranches visited rough maps of the localities showed conclusively that the frost occurred chiefly in the low places, basins, and bottoms, or where the cold air had drained down and settled. The principle laid down in Bulletin No. 29, that frost was primarily a problem in air drainage, was conclusively upheld. Wherever the air was stagnant the injury from frost was most marked; and, conversely, wherever the air was in motion there was little damage from frost. Fruit on open benches, hillsides, and terraces escaped. The streakiness of frost and the many apparent irregularities in its formation can be explained easily if we remember that there are currents and stream lines in the air, and that these currents may have rather sharply defined limits. A slow-moving current of air on a still night in an orchard that appears to be nearly level may result in an absence of frost along its path, while close by, where the air is stagnant, frost will be formed.

A third particular point resulting from this visit to the ranches was the confirmation of the belief that the damage from frost could be greatly lessened if some means were provided whereby the chilled fruit could be protected from the sudden warming at sunrise. Some rough temperature observations made in ranches at about the time of sunrise on frosty mornings showed a rise of as much as 10° in the air temperature within thirty minutes. It was also noted in several ranches that the areas of greatest loss by frost were those where the sun's heat came suddenly upon the trees. It is believed that much fruit can be saved even when chilled or frozen if some screen is interposed between the fruit and the sun, so that the warming may be gradual. It is even admissible to thoroughly wet the fruit with cold water, and there are numerous instances of fruit escaping serious injury even when it has been covered with a thin coating of ice. It is of the utmost importance that the thaw for an hour or two following sunrise be gradual.

The following methods of protecting fruit from frost are taken from Bulletin No. 29:

METHODS OF PROTECTING.

Every fruit grower should put himself in communication with the nearest center of distribution of weather forecasts. If possible he should be in daily communication with some Weather Bureau office. Whenever frost warnings are issued for his locality he should carefully determine the temperature and dew-point, as elsewhere described, frequently during the late afternoon and night. A good outfit consists of a metallic thermometer so arranged as to automatically close an electric circuit and ring an alarm whenever the temperature of the air reaches 32°. In addition to a reliable sling psychrometer there should be some small device for testing the motion of the gentle air currents in the orchard. Too much attention can not be given to this question of air motion. Many smudging devices have failed to be effective because of a slow movement of the smoke away from the orchard.

PROTECTIVE METHODS BASED ON MIXING THE AIR.

It is well known that lowlands are visited with frost while hillsides and hilltops escape. Every fruit grower should study the topography of his land and plant accordingly. Wind-breaks are, as a rule, considered detrimental. No hard and fast rule, however, can be laid down. On a well-known lemon and orange ranch at Santa Paula, the

FIG. 13.—Wire baskets in citrus grove.

property of Mr. N. W. Blanchard, there are several large wind-breaks which have proven themselves to be of the greatest benefit in protecting fruit from frost. It would almost seem as if the citrus trees within a distance of 50 feet were directly protected by these wind-breaks. By planting a wind-break in the proper place, defects in the

FIG. 14.—Wire baskets hung from limbs of orange trees.

topography may be overcome and air currents established where otherwise pools of quiet air would have formed. A wind-break dense enough and so situated as to interfere with any natural circulation and facilitating the formation of still areas or pools would, of course, prove injurious.

PROTECTIVE METHODS BASED ON WARMING THE AIR.

A large number of small fires, advantageously placed, will raise the temperature of the air several degrees. The Riverside Horticultural Club, testing the various methods which were in use in California, came to the conclusion that wire baskets suspended a few feet above the ground, and holding several pounds of coal or charcoal, made an efficient protector. This method was described by Mr. Edward Copely, of Riverside, Cal., in several articles published in the Riverside Press of April, 1896. The cost of the wire basket is about 10 cents, and if 40 baskets be used to the acre, the cost of fuel will hardly exceed $2.50. To this must be added the cost of labor during the night and succeeding day in refilling the baskets. In the accompanying figs. 13, 14, and 15, the baskets are shown in position. This method meets with most favor in southern California. The temperature can be raised certainly 3° or 4° with from 20 to 40 of these baskets to the acre. It has been suggested that a number of small oil lamps be used with success for this purpose. Oil pots have been used and make a hotter fire, but the deposit of lamp black upon the fruit is objectionable. Some cheap modification of the ordinary plumber's furnace might possibly be devised, which, by means of a moderate blast, would produce a high temperature.

PROTECTIVE METHODS BASED ON CLOUD OR FOG FORMATION.

Damp straw, old wood, prunings, manure, etc., when burned briskly furnish an effective smoke, and if the material while burning is doused with water the result is a dense steamy smoke, which, while trying to human lungs, serves as a screen to prevent loss of heat by radiation, and as a barrier between the chilled fruit and a sudden

FIG. 15.—Wire baskets in lemon and orange grove.

application of heat at the time of sunrise. Wet smudging has been tried in many ways with varying results. There are many reports of failure and, on the other hand, some definite results, showing the good accomplished by this method. Here, as in all other methods of protection, much will depend upon a careful study of the local conditions. Many a farmer smudges so that some neighbor gets the benefit of his work, while his own fruit remains unprotected. All motion of the air should be noted carefully, and this is sometimes difficult where the smoke is very dense. In some orchards sacks of old straw soaked with oil are so distributed as to be available for quick lighting. Portable smudges have also been devised. Fig. 16 illustrates a portable device by Mr. Priestley Hall.

Mr. Hall has made an efficient form of sled operating on the wet-smudge principle. Upon a sheet-iron sled he has placed a small fire box, consisting of a grate 4 or 5 inches above the bed of the sled, over which pass iron rods bent in the form of an arch, leaving a space for the fire about 14 inches in diameter. This fire box is inclosed in a large corrugated iron box, which has the bed of the sled (about 3 or 4 feet in size) for a bottom, and sides 30 inches high. A door is made in front of the corrugated box to admit fuel to the fire. The box is filled with wet straw or manure, and a fire is maintained in the fire box when the machine is in operation. The cost is about $12; one will do for 10 acres.

PROTECTIVE METHODS BASED ON IRRIGATION.

Of all methods proposed for the protection of fruit, excepting wire baskets, irrigation has the largest amount of evidence in its favor. It has been tried in many different places with different crops and has generally given satisfaction. Where water is not very plentiful, and this is the case strangely enough in some fruit sections, the method

may not always be practicable, but with this exception there are many decided advantages in the generous use of water. Injury from frost depends almost as much upon the condition of the tree as upon the severity of the weather. Critical periods in the life of the tree can be controlled to some degree by the use of water.

Some fruit growers hold that heat is the one thing that is desired at times of frost, and that the best method is that which produces heat by the simplest and least expensive process. Water, owing to its high specific heat, forms

FIG. 16.—Mr. Priestley Hall's device for smudging.

an excellent agency for the temporary storage of heat energy. We have seen that in the wet smudge an attempt is made to utilize the latent heat of vaporization, and theoretically this has always seemed the most advantageous method. A modification of the wet smudge is steam piped through an orchard. This experiment was made by the Wright Brothers at Riverside, Cal., with a 35-horsepower boiler and a main pipe 2 inches in diameter, from which,

FIG. 17.—Eight miner's inches of warm water in orange grove at Meacham Ranch.

at right angles every 40 feet, pipes three-quarters of an inch in diameter were extended. It is claimed that the temperature was raised 3° whenever the steam was turned on. It is also said that the coal consumed would not be more than the amount used by the basket method. The estimated expense per acre would be about $75.

The latest device for the protection of citrus fruit against frost combines the good effects of irrigation with heating. This is a method known as the warm-water method, tried at Riverside. An account of the experiment follows.

EXPERIMENT OF MR. ERNEST A. MEACHAM, RIVERSIDE, CAL.

"On the morning of February 9, 1900, at the Meacham Ranch, a test was made of the Meacham warm-water method of protecting citrus fruits against frost. The experiment began at 3.45 a. m. and was conducted in the presence of a number of gentlemen belonging to the Riverside Horticultural Club, nearly all of whom were orange growers.

"At 6.30 a. m. the temperature of the ground 100 feet or more away from the boiler was 32°. The temperatures given herewith are those obtained by Mr. McAdie, of the Weather Bureau, with sling psychrometer No. 70; the number of the dry thermometer was 4487 and of the wet 4486. The plant consists of a 12-horsepower tubular horizontal boiler, laid in a brick furnace and arranged to deliver water with or without pressure. Cold water enters the bottom of the boiler and is delivered from the top orifice directly into the flume. The fuel used was crude petroleum, of which about 50 gallons were used in three and one-half hours. At the rate of 14 gallons an hour and an estimated cost of a little over 4 cents per gallon, the actual expense of fuel for the experiment was about 60 cents per hour. The oil is burned with a steam jet under pressure. A secondary 6-horsepower boiler, carrying 70 pounds of steam, was used. The oil is thus entirely consumed and makes but little smoke. The whole arrangement is such that not more than two men would be required to attend to all the details.

"Fifty minutes from the time of beginning, the water which had an initial temperature of 55.4° was raised 30°. Two sets of temperature records were made, one by Mr. Priestley Hall and the other by Mr. McAdie. In Mr. Hall's test 8 inches of water was run in 50 furrows, which barely ran the water past the ends of the furrows. In the second case 8 miners' inches of water was delivered into 25 furrows, thus carrying the heat farther down the furrows than

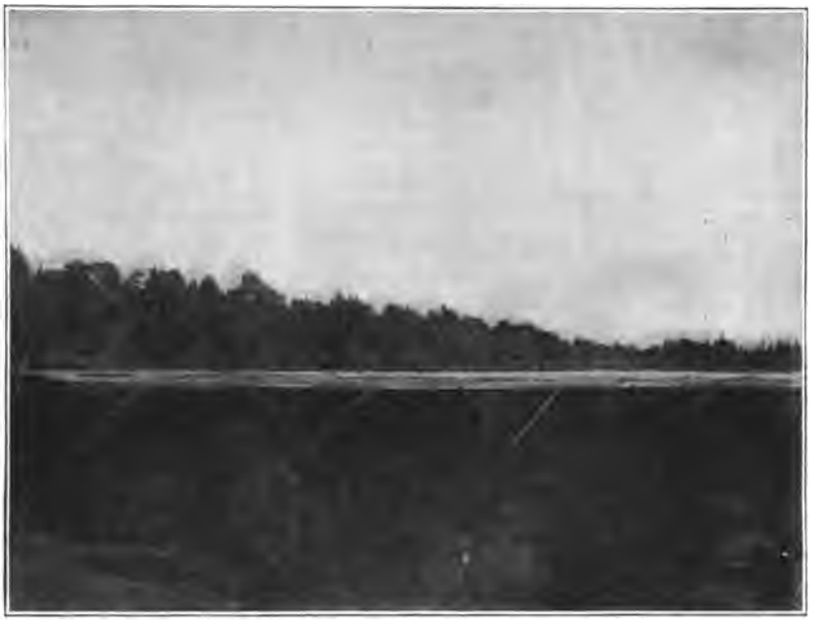

FIG. 18.—Lath screen at ranch of Mr. A. J. Everest, Riverside, Cal. (view from above).

in the first experiment. According to the present laws of California, a miner's inch is $\frac{1}{50}$ cubic foot per second; the 'second-foot' is the quantity represented by a stream 1 foot wide and 1 foot deep, flowing at the average rate of 1 foot per second. A cubic foot of water, maximum density, weighs 62.4 pounds; a gallon contains 10 pounds of distilled water at 62°. The data obtained by Mr. Hall were as follows: 5.30 a. m., normal temperature, 34°; normal temperature of water, 60°; temperature of heated water, 92°; at the flume, 92°; 20 rods from the flume, 58°; 40 rods, 52°; temperature of unheated water 40 rods from the flume, 41.5°; vapor condensed on trees early in the morning and more condensed on the trees in the heated plat.

"Mr. McAdie's records are as follows: Time, 6.30 a. m., air temperature varying from 34° to 36°; temperature on the ground, 32°; frost was observed on grass blades; initial temperature of water, 55.4°; heated water delivered to flume at 85.2°; in a straight line down a furrow 200 feet from the boiler in the direction of the wind (motion of the air was very gentle) there was a fall in temperature of 14.2°; water vapor was observed rising to a height of about 4 feet; 200 feet from flume, as stated, the temperature of the water was 71°; the temperature of the surface soil 4 inches right and left of the water was 43°; temperature of the soil 16 inches from the water or in the middle of the ridge, 42.2°. It is presumed that the temperature of the ground, had no water been flowing, would have been 33°, and it would seem as if the soil itself was warmer by nearly 10°. At the end of a furrow, 600 feet, the temperature of the water was 54°, or there had been a fall of 31° in 40 rods; the temperature of the ground 4 inches from the water, 38°; 16 inches from the water, 36°; temperature of unheated water 50 rods from the flume, 40°.

"The approximate value of the plant was $200, and it is estimated that for a plant all equipped sufficient for a 10-acre grove $600 would cover all expenses." (See fig. 17.)

SPRAYING.

After frost, or rather just before a frost has ended, a spraying device can be used to advantage. Its chief function is to prevent a too rapid warming of the chilled fruit. It is said by horticulturists that even the light coating of ice formed in this way does not seriously damage the fruit. It is very likely that the latent heat of solidification set free by the change from water to ice may play a helpful part; but the chief effect is to prevent a too rapid thawing. In other words, both heat and water should be supplied to the chilled plant slowly and according to the plant's ability to make good use of the same. At the A. J. Everest Ranch at Riverside, Cal., a portion of the grove is protected by sprinklers at the top of 50-foot masts.

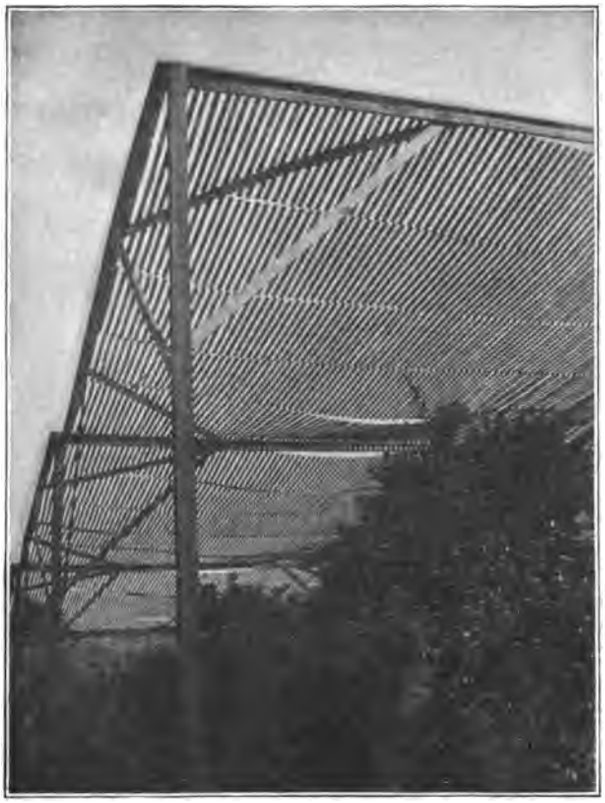

FIG. 19.—Lath screen at ranch of Mr. A. J. Everest, Riverside, Cal. (under view).

PROTECTIVE METHODS BASED UPON SCREENING OR COVERING.

All screening or covering devices are in effect modified hothouses, and there is no question but that a thorough protection can be accomplished. The expense is the one objection. Screens are made of light materials, namely, canvas, muslin, or light wood work, and have been used with considerable success. At the A. J. Everest Ranch an elaborate structure of lath screens is in use, illustrations of which are given herewith (see figs. 18 and 19). There is no question as to the value of the protection, but the expense is considerable, averaging perhaps $400 to the acre. This lath covering may be considered as forming a well-ventilated hothouse.

KILLING FROSTS.

The following table gives the dates on which occurred killing frosts during the year 1899—the last in spring and first in autumn—at stations recording and reporting frosts. The blank spaces in the table indicate that there were no killing frosts at those stations for the period shown, or, in some few cases, that the record is incomplete.

1899.

Station.	Killing frost.		Station.	Killing frost.		Station.	Killing frost.	
	Last in spring.	First in autumn.		Last in spring.	First in autumn.		Last in spring.	First in autumn.
Acton	Mar. 10		Florence	Mar. 12	Dec. 10	Oroville	Feb. 4	Dec. 19
Agnew	.....	Dec. 2	Folsom	Feb. 8	Dec. 18	Palermo	Mar. 10	Do.
Alhambra	Feb. 7		Fort Bragg	Mar. 18	Oct. 15	Palo Alto	Feb. 8	Do.
Alvarado	May 2	Nov. 23	Fort Ross	Mar. 21	Dec. 18	Paso Robles	Apr. 23	Dec. 20
Alviso	Mar. 18	Do.	Fresno	Feb. 7		Peachland	Mar. 10	Dec. 18
Anada	May 15	Oct. 6	Fruto	Mar. 9	Nov. 23	Placerville	Apr. 28	
Anaheim	Apr. 17	Dec. 12	Georgetown	May 1	Oct. 15	Pomona (near)	Mar. 14	Dec. 9
Anderson	Apr. 30	Dec. 3	Gilroy	Mar. 11	Dec. 6	Porterville	Mar. 10	Dec. 10
Angiola	Feb. 10		Grand Island	Feb. 7		Poway	Feb. 7	Do.
Aptos	Mar. 10	Oct. 31	Greenville	Apr. 29	Oct. 1	Puente	.....	Do.
Auburn	May 2	Oct. 15	Guadaloupe	Mar. 18	Oct. 15	Quincy	May 20	Aug. 22
Banning	Feb. 6		Guinda	May 1	Dec. 9	Raymond	May 22	Dec. 1
Bayles	May 1	Dec. 9	Hanford	Apr. 29		Red Bluff	.....	Dec. 19
Ben Lomond	Mar. 10	Dec. 6	Hayward	Mar. 13	Dec. 9	Redding	May 1	Dec. 14
Berkeley	Jan. 5	Dec. 18	Healdsburg	Apr. 17	Oct. 13	Redlands	Feb. 5	
Biggs	Mar. 10		Hollister	Feb. 5	Dec. 6	Reedley	Apr. 28	
Boca	May 1	Oct. 2	Independence	Mar. 18	Oct. 12	Represa	Feb. 9	
Boulder Creek	.....	Oct. 24	Iowa Hill	Mar. 17	Dec. 9	Riverside	Mar. 3	
Bowman's Dam	May 1	Nov. 16	Jackson	Apr. 28	Oct. 15	Rocklin	Mar. 13	
Buena Park	Mar. 4	Oct. 28	Jolon	Apr. 23	Dec. 1	Romie	May 16	Dec. 6
Burlingame	.....	Dec. 18	Keene	Mar. 19	Oct. 15	Rosewood	Mar. 12	Do.
Byron	Feb. 12	Dec. 2	Kernville	May 11	Oct. 7	Sacramento	Feb. 5	Dec. 18
Cahto	May 9	Oct. 25	Kingsburg	Apr. 28		Salinas	.....	Dec. 6
Calistoga	May 1	Oct. 1	La Grange	Feb. 5	Dec. 9	San Ardo	.....	Dec. 9
Campbell	Mar. 10	Dec. 18	La Porte	Apr. 23	Sept. 6	San Francisco	Feb. 5	
Capitola	....do...	Nov. 8	Laurel	Mar. 12	Oct. 24	Sanger	Jan. 26	
Castroville	.....	Dec. 20	Lawrence	Mar. 18	Nov. 22	San Leandro	Mar. 10	
Cedarville	May 18	Oct. 2	Lemon	Feb. 22		San Luis Obispo	Feb. 4	Dec. 27
Chico	Mar. 30	Dec. 12	Lemoore	Mar. 11		San Mateo	Feb. 7	
Claremont	Feb. 6		Lick Observatory	May 25	Oct. 15	San Miguel	Feb. 9	Dec. 18
Colfax	May 1	Dec. 5	Lincoln	Mar. 7		Santa Clara	Mar. 17	Dec. 7
Colton	Feb. 7		Lodi	Mar. 10	Dec. 9	Santa Cruz	Feb. 6	
Corning	Feb. 6		Los Gatos	Mar. 8	Do.	Santa Margarita	Apr. 3	Nov. 27
Coyote	May 10	Oct. 9	Madera	.....	Dec. 10	Santa Paula	Feb. 7	
Craftonville	Feb. 6		Manzana	Feb. 7		Santa Rosa	Mar. 17	Dec. 19
Crescent City	June 19	Oct. 14	Menlo Park	Feb. 6	Dec. 18	Sargent	.....	Dec. 20
Cuyamaca	Mar. 23	Dec. 9	Merced	Mar. 11	Dec. 10	Selma	Feb. 7	
Danville	May 20	Dec. 1	Milbrae	Feb. 7	Dec. 17	Shasta	Mar. 13	Dec. 14
Davisville	Feb. 7	Dec. 19	Mills College	.....	Dec. 1	Soledad	Feb. 6	
Dinuba	May 2	Nov. 27	Milo	Apr. 10	Dec. 20	Suisun	Feb. 8	
Duarte	Feb. 7		Mokelumne Hill	Apr. 28	Nov. 30	Summerdale	May 2	Oct. 24
Dunnigan	....do...	Dec. 19	Monterey	.....	Dec. 20	Susanville	May 25	Oct. 2
Durham	Mar. 13	Dec. 9	Moreno Dam	May 16		Thermalito	Apr. 30	Dec. 19
Edgewood	Apr. 29	Oct. 15	Mount Eden	Mar. 10	Dec. 10	Traver	Feb. 5	
Edmanton	May 2	Oct. 11	Mount Tamalpais	Feb. 6	Dec. 17	Tulare (near)	Mar. 12	Dec. 10
El Cajon	Feb. 7	Dec. 10	Napa	Mar. 13	Dec. 19	Ukiah	Feb. 5	Dec. 13
El Casco	Apr. 26	Dec. 6	Needles	Feb. 5		Upper Mattole	....do...	Dec. 9
El Dorado	....do...	Dec. 20	Nevada City	May 1	Oct. 15	Vacaville	Feb. 9	Dec. 19
Elk Grove	Mar. 10		New Almaden	Mar. 10	Dec. 18	Valley Springs	Apr. 28	Dec. 18
Elmira	.....	Oct. 26	Niles	Apr. 29		Watsonville	.....	Dec. 19
Elsinore	Mar. 12	Dec. 10	North Bloomfield	May 2	Oct. 24	West Point	May 29	Oct. 12
Escondido	Mar. 18	Dec. 7	North Hill Vineyard	Mar. 13	Dec. 9	West Saticoy	Feb. 8	
Eureka	Feb. 7	Dec. 13	North Ontario	Mar. 18		Wheatland	Apr. 1	
Exeter	Feb. 6		North San Juan	May 2	Oct. 30	Willows	Apr. 26	Dec. 13
Fall Brook	Feb. 8		Oakland	Feb. 5		Woodland	Apr. 2	Dec. 4
Farmington	Mar. 13	Dec. 6	Oleta	Apr. 20	Oct. 15	Yreka	May 20	Sept. 6

NOTE.—Killing frosts occurred in every month of the year at Bodie, Mono County. The observer at Los Angeles reports that there were no killing frosts at that station during the year; the first heavy frost occurred December 11, damaging vegetables in exposed places. At San Diego the most severe frost for five years occurred February 6, but did not damage orchards or fruit in citrus region.

1900.

Stations.	Elevation.	Last in spring.	First in autumn.	Stations.	Elevation.	Last in spring.	First in autumn.
	Feet.				*Feet.*		
Anaheim	134	Mar. 13	Dec. 29	North Hill Vineyard	660	Feb. 7	Dec. 30
Angiola	208	Feb. 10	Dec. 27	North Ontario	1,800	.....	Dec. 29
Arroyo Grande	.....	Feb. 8	Dec. 31	North San Juan	2,130	Mar. 20	Oct. 29
Bear Valley	4,600	May 15	Oct. 12	Oakland	14	.....	Dec. 30
Bellevue	.....	Apr. 23	Sept. 26	Oleta	1,510	Apr. 8	Dec. 1
Berkeley	320	Feb. 19	Dec. 30	Oroville	188	Jan. 24	Dec. 30
Bodie	8,248	June 2	Aug. 7	Palermo	185	.....	Dec. 23
Bowman's Dam	5,500	May 25	Sept. 20	Paso Robles	723	Apr. 26	Oct. 30
Campbell	194	Apr. 8	Dec. 28	Peachland	220	.....	Dec. 28
Campo	.....	Apr. 10	Sept. 26	Pilot Creek	4,000	June 21	Sept. 20
Cedarville	4,675	Apr. 27	Sept. 18	Placerville	1,820	Feb. 7	Nov. 28
Chico	193	Apr. 10	Dec. 28	Pollasky	1,200	....do ...	Dec. 28
Cottonwood	423	Mar. 28	Nov. 27	Pomona (near)	857	Feb. 12	Dec. 17
Craftonville	1,759	Feb. 4	Dec. 29	Porterville	461	Feb. 11	Dec. 28
Crescent City	50	Apr. 26	Nov. 20	Quincy	3,350	May 28	Sept. 6
Cuddeback	.....	Apr. 6	Dec. 4	Redbluff	307	.....	Dec. 29
Cuyamaca	4,543	Apr. 30	Sept. 26	Redding	557	Feb. 9	Dec. 3
Delta	1,138	Feb. 9	Sept. 6	Redlands	1,335	Apr. 9	Dec. 31
Drytown	790	Feb. 6	Dec. 28	Rosewood	865	Apr. 10	Dec. 23
Durham	180	Mar. 28	Dec. 23	Sacramento	35	.....	Dec. 31
Edmanton	4,750	Apr. 24	Oct. 29	San Ardo	236	Apr. 10	Dec. 22
Eldorado	1,609	Apr. 9		San Bernardino	1,054	.....	Dec. 31
Elmdale	126	Jan. 9	Dec. 27	San Francisco	183	.....	Dec. 30
Elmira	75	Feb. 8	Nov. 30	San Jacinto	1,500	Apr. 12	Oct. 28
Elsinore	1,271	Apr. 8	Dec. 29	San Leandro	84	.....	Dec. 30
Farmington	111	Apr. 4	Oct. 29	San Luis Obispo	201	Apr. 8	Dec. 29
Folsom	182	.....	Dec. 30	San Miguel	616	Feb. 10	
Fort Tejon	7,650	Apr. 10	Oct. 24	Santa Ana	137	.....	Dec. 28
Fresno	293	.....	Dec. 31	anta Clara	83	Apr. 9	Dec. 31
Garberville	.....	May 1	Dec. 28	Santa Cruz	18	Mar. 27	Dec. 23
Georgetown	2,750	Apr. 8	Nov. 19	Santa Maria	220	Apr. 10	Dec. 13
Gilroy	193	Apr. 9	Dec. 23	Santa Paula	286	.....	Dec. 30
Grand Island	65	Jan. 25	Dec. 30	Santa Rosa	181	Apr. 9	Oct. 29
Greenville	3,600	May 28	Oct. 1	Shasta	1,148	.....	Nov. 21
Hanford	249	Feb. 26	Oct. 25	Sonoma	30	Apr. 9	Dec. 30
Healdsburg	100	.....	Oct. 29	Stanford University	70	Apr. 10	Dec. 31
Hollister	284	Apr. 10	Dec. 4	Stockton	33	.....	Do.
Independence	3,907	Mar. 7	Oct. 30	Suisun City	20	Feb. 12	Dec. 23
Ione	287	Feb. 8	Dec. 28	Summerdale	5,270	May 28	Sept. 25
Iowa Hill	2,825	Mar. 5	Dec. 31	Susanville	4,195	Apr. 27	Sept. 24
Jackson (near)	1,975	Apr. 8	Oct. 29	Tequisquita Rancho	.....	Apr. 10	Dec. 28
Jolon	.....	....do ...	Oct. 23	Thebe	.....	Mar. 15	Oct. 1
Kernville	2,600	May 9	Sept. 27	Thermalito	236	.....	Dec. 30
Kono Tayee	1,325	.....	Dec. 28	Tulare	274	Mar. 28	Oct. 30
Laporte	5,000	May 28	Sept. 6	Ukiah	620	Apr. 9	Dec. 28
Le Grand	255	Apr. 4	Dec. 27	Vacaville	175	Feb. 7	Dec. 29
Lick Observatory	4,209	.....	Oct. 2	Valley Springs	673	Mar. 27	Do.
Lodi	35	Apr. 9	Dec. 29	Vina	213	Apr. 2	
Manton	.....	Apr. 26	Nov. 15	Visalia	334	Apr. 10	Dec. 28
Merced	173	Mar. 28	Dec. 30	Watsonville	23	Apr. 8	
Mokelumne Hill	1,550	Apr. 8	Dec. 2	West Point	2,326	Apr. 9	Oct. 7
Moreno Dam	3,100	Apr. 29	Oct. 30	Wheatland	84	....do ...	Dec. 28
Napa	20	Feb. 6	Dec. 30	Wire Bridge	565	....do ...	Dec. 23
Nevada City	2,580	Apr. 27		Woodland	63	Mar. 5	Nov. 29
Niles (near)	87	Apr. 9	Dec. 30	Yreka	2,635	Mar. 29	Sept. 30
North Bloomfield	3,000	Apr. 14	Oct. 29	Yuba City	70	Jan. 24	Dec. 29

AVERAGE DATES OF KILLING FROSTS.

Stations.	Counties.	Elevation.	Average date.		Stations.	Counties.	Elevation.	Average date.	
			Last in spring.	First in autumn.				Last in spring.	First in autumn.
		Feet.					*Feet.*		
Anaheim	Orange	134	Apr. 4	Dec. 20	North Ontario	San Bernardino	1,800	Mar. 14	Dec. 14
Berkeley	Alameda	320	Jan. 28	Dec. 15	North San Juan	Nevada	2,130	Apr. 11	Oct. 15
Bowman's Dam	Nevada	5,500	Apr. 26	Oct. 25	Oakland	Alameda	14	Jan. 7	Dec. 20
Campbell	Santa Clara	194	Mar. 25	Nov. 25	Oleta	Amador	1,510	Mar. 20	Nov. 19
Cedarville	Modoc	4,675	May 15	Oct. 6	Paso Robles (near)	San Luis Obispo	723	Apr. 1	Nov. 5
Claremont	Los Angeles	1,200	Mar. 17	Dec. 5	Peachland	Sonoma	220	Apr. 14	Nov. 21
Crescent City	Del Norte	50	May 10	Nov. 7	Pomona (near)	Los Angeles	857	Apr. 2	Nov. 20
Durham	Butte	180	Apr. 5	Do.	Quincy	Plumas	3,350	May 15	Sept. 14
Edmanton	Plumas	4,750	May 10	Oct. 22	Redbluff	Tehama	307	Mar. 27	Dec. 16
Elsinore	Riverside	1,271	Mar. 23	Nov. 26	Riverside	Riverside	1,000	Mar. 17	Dec. 20
Eureka	Humboldt	64	Mar. 29	Nov. 29	Rosewood	Tehama	865	Apr. 8	Nov. 7
Fresno	Fresno	293	Mar. 1	Nov. 15	Sacramento	Sacramento	35	Feb. 16	Nov. 15
Healdsburg	Sonoma	100	Apr. 8	Nov. 16	San Francisco	San Francisco	183	Jan. 25	Dec. 10
Hollister	San Benito	284	....do...	Nov. 21	San Luis Obispo	San Luis Obispo	201	Mar. 5	Nov. 18
Independence	Inyo	3,907	Mar. 23	Oct. 25	Santa Maria	Santa Barbara	220	Mar. 10	Nov. 25
Iowa Hill	Placer	2,825	Mar. 15	Dec. 16	Summerdale	Mariposa	5,270	May 7	Oct. 17
Jackson (near)	Amador	1,975	Apr. 15	Oct. 25	Susanville	Lassen	4,195	May 10	Sept. 22
Lodi	San Joaquin	35	Mar. 12	Nov. 16	Ukiah	Mendocino	620	Apr. 14	Nov. 1
Mokelumne Hill	Calaveras	1,550	Mar. 21	Dec. 15	Vacaville	Solano	175	Mar. 12	Dec. 21
Napa (S. H.)	Napa	20	Mar. 20	Nov. 15	Wheatland	Yuba	84	Feb. 20	Nov. 26
North Bloomfield	Nevada	3,000	Apr. 17	Do.	Yreka	Siskiyou	2,635	May 24	Sept. 26
North Hill Vineyard	Calaveras	660	Feb. 20	Dec. 13					

FOG.

One of the most marked atmospheric conditions with which the forecaster has to deal on the coast of California is fog. Particularly in the vicinity of San Francisco are the effects of the fog noticeable. Owing to the peculiar topography of this section, there are certain well-marked stream lines in the general movement of the air from west to east; and in these streams great masses of the condensed water vapor lying beyond the heads and along the coast are carried in through the Golden Gate. There are times when, judging from such reports as are available, fog prevails along the entire Pacific coast. On the daily weather map which is issued at San Francisco attention has been called several times within the last few years to the fact that nearly every coast station reported fog, thus indicating the presence of a bank of fog at sea from 1,400 to 1,600 miles in length. The distance seaward to which this fog extended is not known, but from the records contained in logs of vessels sailing from San Francisco it is thought that an average value would be about 50 miles. Now, fog, whether it appears for a few hours at certain seasons, as in the harbors of the Atlantic coast, or regularly on summer afternoons and winter mornings along the Pacific coast, and whether it lies in sharply defined streams and strata, as at San Francisco, or in ill-defined general banks, as off Newfoundland, indicates certain sharp contrasts of temperature and air motion. On the Pacific coast there are several well-marked types of fog—the summer afternoon fog, moving from the sea to the land; the morning winter land or tule fogs, which move seaward, and occasional nondescript smoke fogs near the larger cities.

At Mount Tamalpais we are able to look down upon the fog streaming through the Golden Gate. On one side the ocean maintains a temperature of about 55° F., while inland the temperature is much higher. Some illustrations of the fog effects as photographed at the Weather Bureau Observatory were published in the Monthly Weather Review for July and November, 1900, and January, February, and March, 1901, and are here reproduced.

The differences in temperature, humidity, and air motion are so marked within comparatively small distances, both horizontally and vertically, in the bay district that it seemed advisable to tabulate in comparative form the meteorological elements for a year at the higher station (elevation approximately half a mile) and the station at sea level. The present paper aims to present, with some photographic evidence of fog forms and drifts, a rough study of the air drainage of the locality in which fog streams and counter streams are of such frequent occurrence that they serve excellently as exponents of air motion. The topography of the section is remarkable, because of the close juxtaposition of ocean, bay, mountain, and foothill. A valley, level as a table, 450 miles long and 50 miles wide, having afternoon temperatures of 100° or over, is connected by a narrow water passage with the Pacific Ocean, the mean temperature of the water in this locality being 55°. Thus within a distance of 50 miles in a horizontal direction there is frequently a difference of 45° in temperature, while in a vertical direction there is often a difference of 30° in an elevation of half a mile. High bluffs, ridges, and headlands are at such an angle to the prevailing strong westerly surface air currents that an air stream is forced with increased velocity through the Golden Gate, and there must of necessity be considerable piling up of both air and water vapor at this point. The locality may indeed be considered as a natural laboratory in which experiments connected with cloudy condensation of water vapor are daily wrought, and it is therefore of more than passing interest to the meteorologist.

Much faithful work has been done in physical laboratories on the behavior of water vapor at varying volumes, pressures, and temperatures. Regnault, Thomson, Broch, Aitken, Kiessling, R. von Helmholtz, Hertz, Rayleigh, Von Bezold, Barus, Marvin, and others have worked upon the change of state from vapor to liquid and from liquid to solid; and while many irregularities are noted in the behavior of water vapor, the general problems of decreasing volumes and increasing pressures until condensation points are reached have been solved, and it is well understood that the vapor-liquid and liquid-solid condensations are in themselves but two phases in a chain of condensation phenomena. The problem of fog is therefore a limited one. It may be considered as a special case of cloud development, occurring in the first and second stages of Hertz, viz, the unsaturated and saturated stages. Condensation in the free air, as in these fog formations, takes place under conditions different from those obtaining in the laboratory. There are no fixed restraining walls, though the strongly stratified outlines suggest sharply limited air streams. Again, saturation as it occurs in free, constantly changing air and true adiabatic saturation are not identical. Saturation in the free air must be studied under disadvantageous circumstances, for the work must be done at a distance, with instruments neither sufficiently delicate nor accurate, and there is no control of conditions possible. In passing it may be noted that, except for traces of salt, the air of the section under consideration is partially filtered, as it presumably comes from off the broad ocean and is as free from land dust and smoke as normal air can be. Offshore winds are infrequent and light.

An attempt has been made at the Mount Tamalpais station to correlate the surface pressure conditions with fog. A typical pressure distribution accompanying sea fogs has been recognized. In general, a movement southward along the coast of an area of high pressure in summer means fresh northerly winds and high temperature in the interior of the State, with brisk westerly winds, laden with fog, on the coast.

An excellent illustration of a successful forecast of fog may be found in connection with the daily weather map of June 30, 1899, and also July 1, 1899. It should, however, be stated that fog does not always occur with these typical fog maps. For example, on June 28, 1899, the pressure distribution was such as to lead to the expectation of fog, but no fog was reported on this date.

COMPARATIVE DATA FOR SAN FRANCISCO AND MOUNT TAMALPAIS.

In Bulletin No. 28 issued by the Weather Bureau, entitled "The Climate of San Francisco," meteorological data pertaining to the city of San Francisco are given up to the beginning of 1899. It is not necessary to repeat here these records; but the data for 1899, being available, possess special interest:

Year and month.	Mean monthly temperatures.		Year and month.	Mean monthly temperatures.		Year and month.	Mean monthly temperatures.	
	Mount Tamalpais.	San Francisco.		Mount Tamalpais.	San Francisco.		Mount Tamalpais.	San Francisco.
1899.	°F.	°F.	1899.	°F.	°F.	1899.	°F.	°F.
January	47.8	53.0	June	66.8	56.9	November	49.4	56.8
February	47.6	51.6	July	71.0	55.9	December	47.7	49.6
March	44.6	52.2	August	61.4	58.3	Annual	55.6	54.9
April	51.6	54.6	September	73.2	58.2			
May	51.2	52.6	October	55.3	59.3			

These temperatures, compared with those of 1898, show that the annual mean temperature of both stations for the two years is practically 55°, which is also the mean annual temperature, so far as we can judge from somewhat scattered data, of the ocean in the vicinity of San Francisco. The temperature of the lower station naturally approximates sea conditions throughout the year, while the departures at the more elevated station are marked in both winter and summer.

The highest temperature recorded on the mountain during the year was 96°, on July 18; the maximum temperature on the same date at San Francisco being 66°, and at Point Reyes 52°. It is worthy of note than within so short a distance as 25 miles, between Mount Tamalpais and Point Reyes, there should be a difference of 44°. The highest temperature recorded at San Francisco during 1899 was 94° on October 8, while on this date the maximum temperature on Mount Tamalpais was 88°, and at Point Reyes 74°. The lowest temperature recorded during the year on the mountain was 23°, on February 4, and on the same date 34° at San Francisco and at Point Reyes. The minimum temperature was, therefore, 11° lower at the higher station. As has been elsewhere stated, during summer months there is very frequently, owing to the fog, a cooling of 11° at the lower station. In all of these instances the retarding influence of the water is apparent, in summer the temperature near the sea remaining cool, and comparatively warm in winter.

Including every day in the month of June there was found to be a mean daily difference of 11.4°, or in other words from the data obtained by means of this mountain station, checked by data from Point Reyes and Mount Hamilton, the temperature rose at the rate of 1° for every 203 feet of elevation. This increase held at least up to 2,380 feet.

If we consider only those days in the month (twenty-four) when there was a rise with elevation, we have for the mean daily difference in temperature between Mount Tamalpais and San Francisco 15.3°, i. e., the temperature rises 1° for every 155 feet elevation. This may be adopted as a working normal summer-day gradient.

For days when there was a decrease in temperature with elevation, six in all, we find a difference of 5.9°, or there was 1° fall for every 402 feet, which, it may be noted, is not quite as steep a gradient as values generally given in text-books, 1° for every 300 feet.

We notice first that periods of rainy or cloudy and cold weather occur when the surface temperatures are higher than those of the upper level. It would seem as if at these times the different air strata from sea level to 2,500 feet had been intermingled to some degree and the cold layer usually existing close to the surface had been temporarily displaced.

Fogs seem to occur at times of steep inverted gradients; in other words, when the temperature of the 2,500-foot level is considerably higher than at sea level.

The conclusion to be drawn from what precedes is that the summer fogs of San Francisco result from the chilling of the upper warm air over the ocean by the water, particularly the cold current close to the shore. The strong indraft through the Golden Gate on summer afternoons (see charts of hourly wind velocity, 3 to 7 p. m., fig. 6) carries with it the fog. The movement of the lower fog-laden air eastward and into the valley is compensated by a westward air movement at higher levels. The great difference of temperature between the valley and the ocean, often 50° within as many miles, is probably the prime factor in controlling the circulation.

The mountain, as might be supposed, is the drier station, the mean relative humidity being 59 per cent, while it is 83 per cent at San Francisco. Especially during the summer months is the difference noticeable, and, doubtless, it is this dryness which causes such an agreeable "change of climate" to visitors at this season. The difference may perhaps be stated more clearly in this way: The weight of water vapor per cubic foot varies from 1.9 grains to 3.5 grains on the mountain during the year, while at San Francisco it varies from 3.3 grains to 4.4 grains. The average hourly wind velocity seems to increase with elevation, the values for the mountain station far exceeding those of the lower station. The maximum velocities recorded are, respectively, 91 and 47 miles per hour. The total wind movement was 177,017 miles at Mount Tamalpais and 96,602 miles at San Francisco.

COMPARATIVE DATA.

MOUNT TAMALPAIS, 1899.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
Mean actual pressure	27.62	27.65	27.53	27.54	27.53	27.51	27.50	27.49	27.56	27.52	27.55	27.62	27.55
Mean maximum temperature	51.8	53.3	49.5	58.6	58.1	73.9	78.2	68.5	79.9	60.7	52.9	52.3	61.5
Mean minimum temperature	43.8	41.9	39.6	44.7	44.3	59.6	63.7	54.2	66.6	49.9	45.9	43.1	49.8
Mean monthly temperature	47.8	47.6	44.6	51.6	51.2	66.8	71.0	61.4	73.3	56.3	49.4	47.7	55.7
Highest temperature	69	71	69	77	82	86	96	79	92	88	61	64	96
Lowest temperature	32	23	32	32	33	41	46	45	47	37	40	34	23
Dew-point	34	29	36	35	35	39	33	39	32	37	46	41	36
Relative humidity	70	56	77	58	62	43	30	50	29	63	91	80	59
Total rainfall	5.92	0.28	10.38	1.89	1.70	0.29	0.00	0.01	0.00	4.26	7.48	4.65	36.86
Greatest 24-hour rainfall	1.54	0.14	2.51	0.53	1.39	0.24	0.00	0.01	0.00	1.32	2.51	0.83	2.51
Mean cloudiness	6.0	3.4	6.7	4.7	4.1	1.8	1.2	2.3	2.0	4.6	8.0	4.6	4.1
Average hourly wind velocity	24.0	23.2	22.8	19.8	22.9	19.8	17.6	16.5	17.1	18.2	16.7	23.9	20.2
Prevailing wind direction	NW.	NW.	W.	N.	NW.	NW.	NW.	W.	NW.	NW.	NW.	NE.	NW.
Maximum wind velocity	86	84	76	84	78	86	61	91	66	71	56	76	91
Maximum wind direction	W.	NW.	NW.	NW.	NW.	NW.	N.	NW.	NW.	NW.	W.	N.	NW.
Clear days	8	14	7	13	17	24	29	24	26	16	2	16	196
Partly cloudy days	9	13	7	8	9	5	2	4	4	5	10	4	80
Cloudy days	14	1	17	9	5	1	0	3	0	10	18	11	89
Days with 0.01 inch rainfall	14	4	17	7	3	3	0	1	0	11	19	13	92
Days with 0.04 inch rainfall	14	2	16	6	3	1	0	0	0	8	15	12	77
Actual hours sunshine	174.9	263.8	162.6	300.7	344.6	404.5	445.4	373.4	354.7	234.0	105.9	177.7	3,342
Percentage of sunshine	57	87	44	76	78	91	99	88	95	67	35	60	73
Mean daily range of temperature	8.0	11.4	9.9	13.9	13.8	14.3	14.5	14.3	13.3	10.8	7.0	9.3	11.7
Mean daily change of temperature	2.8	3.8	4.1	6.3	4.7	6.1	5.9	4.7	3.4	4.2	2.1	3.1	4.3
Total wind movement	17,821	15,608	16,986	14,234	17,074	14,257	13,108	12,283	12,307	13,561	11,996	17,782	177,017

SAN FRANCISCO, 1899.

Mean actual pressure	29.98	30.00	29.89	29.87	29.87	29.78	29.78	29.78	29.83	29.83	29.88	29.98	29.87
Mean maximum temperature	58.3	58.0	57.3	61.2	58.3	63.4	61.5	63.5	65.1	66.1	61.0	54.8	60.7
Mean minimum temperature	47.6	45.3	47.1	47.9	46.9	50.4	50.3	53.1	51.3	52.5	52.6	44.4	49.1
Mean monthly temperature	53.0	51.6	52.2	54.6	52.6	56.9	55.9	58.3	58.2	59.3	56.8	49.6	54.9
Highest temperature	78	80	74	80	80	75	73	78	73	94	65	63	94
Lowest temperature	40	34	42	43	43	47	48	50	48	46	48	37	34
Dew-point	46	45	48	45	45	49	50	52	52	50	52	44	48
Relative humidity	80	82	86	76	79	83	87	84	89	78	86	83	83
Total rainfall	3.67	0.10	7.61	0.62	0.86	0.01	0.00	T.	0.00	3.92	3.79	2.65	23.23
Greatest 24-hour rainfall	0.98	0.08	2.15	0.46	0.77	0.01	0.00	T.	0.00	1.94	1.51	1.17	2.15
Mean cloudiness	6.7	4.6	6.5	3.0	2.6	2.0	3.6	3.3	3.0	3.0	5.8	3.8	4.0
Average hourly wind velocity	7.9	8.7	9.8	11.7	13.9	14.2	15.3	14.4	12.6	8.5	6.6	8.6	11.0
Prevailing wind direction	SE.	W.	W.	W.	W.	W.	SW.	SW.	SW.	W.	SE.	N.	W.
Maximum wind velocity	47	39	36	38	37	44	41	39	40	41	30	30	47
Maximum wind direction	SW.	W.	W.	W.	W.	W.	W.	W.	W.	W.	SW.	SW.	SW.
Clear days	5	11	6	18	21	23	16	18	20	21	8	18	185
Partly cloudy days	11	10	9	10	7	5	11	11	8	5	11	6	104
Cloudy days	15	7	16	2	3	2	4	2	2	5	11	7	76
Days with 0.01 rainfall	11	2	15	5	2	1	0	0	0	9	12	10	67
Days with 0.04 rainfall	9	1	10	3	2	0	0	0	0	6	11	10	52
Actual hours sunshine	152.1	215.7	192.9	327.7	365.1	382.4	294.1	308.4	292.5	272.5	129.1	190.5	312.3
Percentage of sunshine	50	71	52	83	83	86	65	73	78	78	42	64	69
Mean daily range of temperature	10.7	12.7	10.2	13.3	11.4	13.0	11.3	10.4	13.8	13.6	8.4	10.4	11.6
Mean daily change of temperature	2.0	3.1	2.6	4.3	2.2	3.1	2.1	2.0	2.2	3.4	1.9	2.3	2.6
Total wind movement	5,864	5,660	7,316	8,394	10,346	1,019	11,356	10,722	9,066	6,298	4,757	6,430	96,602

SUNSHINE AT MOUNT TAMALPAIS FOR 1899 AND 1900.

[N. lat. 37° 56′.]

	Percentage of sunshine recorded during hours ending (local time)—															Total (hours).	Percentage of possible.
	5h a. m.	6h	7h	8h	9h	10h	11h	Noon.	1h	2h	3h	4h	5h	6h	7h	8h	
1899.																	
January	.....	.....	.....	60	57	56	62	60	57	57	54	57	49	72	.....	.....	174.9	57
February	.....	.....	78	85	88	90	90	85	88	90	91	93	81	77	.....	.....	263.8	87
March	.....	25	26	46	48	47	43	41	45	55	50	49	50	27	4	.....	162.6	44
April	.....	21	50	78	77	76	76	80	86	85	89	91	89	83	48	.....	300.7	76
May	47	45	72	81	83	81	79	72	84	85	88	88	92	90	64	11	344.6	78
June	84	84	87	87	86	87	87	89	95	99	97	97	97	98	96	78	404.5	91
July	95	94	97	98	100	100	100	100	100	100	99	100	99	100	100	96	445.4	99
August	.....	66	87	87	92	94	91	88	88	91	92	93	95	94	76	29	373.4	88
September	.....	96	94	88	96	98	98	100	98	98	97	96	94	85	85	.....	354.7	95
October	.....	100	59	58	64	61	66	69	71	76	76	75	65	64	.....	.....	234.0	67
November	.....	.....	31	30	31	33	38	35	36	40	35	39	39	100	.....	.....	105.9	35
December	.....	.....	82	54	56	62	63	62	64	63	58	59	55	.....	.....	.....	177.7	60
Sum	226	531	763	852	878	885	893	881	912	939	926	937	898	890	473	214	3,342.3	877
Percentage of possible	.....	.....	.....	71	73	74	74	73	76	78	77	78	75	.....	.....	.....	278.5	73
1900.																	
January	.....	.....	.....	44	48	50	49	55	56	63	65	62	52	46	.....	.....	165.7	55
February	.....	.....	67	69	72	67	62	60	74	73	69	69	62	61	.....	.....	203.3	67
March	.....	100	79	71	72	77	76	72	73	77	74	74	66	62	76	.....	270.4	73
April	.....	53	56	56	62	66	69	66	65	69	70	69	61	58	55	.....	249.1	63
May	88	68	67	71	70	73	71	69	72	75	77	81	80	72	70	96	322.2	73
June	66	62	62	69	67	73	79	73	81	86	86	85	86	85	76	78	338.0	76
July	96	94	95	94	94	95	97	93	94	98	95	91	91	91	88	89	419.7	93
August	.....	80	81	81	83	86	88	86	91	94	93	90	87	84	85	100	364.9	86
September	.....	59	69	69	69	75	72	66	76	79	76	76	77	71	60	.....	270.5	73
October	.....	0	60	61	71	74	76	72	74	75	72	74	65	59	.....	.....	243.3	70
November	.....	.....	64	46	46	52	51	50	49	48	59	59	49	0	.....	.....	155.9	51
December	.....	.....	100	56	59	60	65	54	59	66	62	60	60	.....	.....	.....	178.7	60
Sum	250	516	800	787	813	848	855	816	864	903	898	890	836	689	510	363	3,181.7	840
Percentage of possible	.....	.....	.....	66	68	71	71	68	72	75	75	74	70	.....	.....	.....	265.1	70

The following notes on "Fog at Mount Tamalpais" are reprinted from the Monthly Weather Review, November, 1900, and January, February, and March, 1901:

In fig. 21, Plate I, is shown perhaps the most common type of fog. It may be of interest to compute roughly the weight of water vapor existing under such conditions. From a number of records, a fair average dew-point temperature is 51° F. (10.6° C.). It is estimated that an area 10 miles east and west and an equal distance north and south is covered with fog The upper level of the fog may be taken as half a mile. If the fog were solidly packed, we could not be much in error if we estimated its bulk at 50 cubic miles.

There are, therefore, $5280^3 \times 50$ cubic feet of water vapor at a mean temperature of 51° F. A cubic foot of vapor at this temperature weighs 4.222 grains, and we therefore have as a gross weight 2,219,535 tons of 2,000 pounds each. But most generally the fog disappears between sea level and 1,200 to 1,500 feet altitude, and there are also wide swaths or channels fog free. The amount given above, therefore, would need to be cut in two, and a liberal estimate of the weight of the water vapor in a fog outside the Heads is 1,000,000 tons. This is carried through the Golden Gate by westerly winds, blowing 22 miles per hour, from 1 to 5 p. m.

For each square mile of surface there would be about 10,000 tons of water vapor and for each acre about 15.63 tons. This is equivalent to a rainfall of 0.14 inch.

In Waldo's Modern Meteorology [a] an example in the use of Hertz's graphical tables for following the changes in a given quantity of water vapor under varying conditions is given. With little change, the problem will apply in this case.

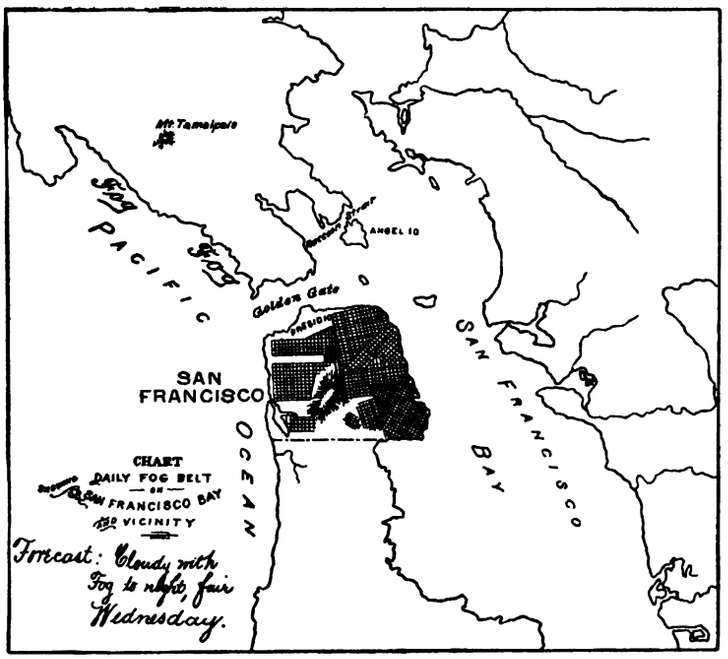

FIG. 20.—Fog service at San Francisco. Corner of large map standing in main corridor of Ferry Building. By means of frequent reports from Point Reyes and Mount Tamalpais the extent and character of fog over Drakes Bay, the roadstead, and the Gate itself are known in the city.

At San Francisco the mean actual pressure is 29.87 inches (758.7 mm.) and at Tamalpais 27.55 inches (699.8 mm.); the elevation of the latter station is 724 meters, and the former is practically at sea level.

With a pressure of 750 mm. and a temperature of 27° C. (80° F.), a given mass of air, half saturated, lifted upward under adiabatic conditions, will not change its initial 11 grams of water contents per kilogram until at an elevation of 640 meters, when condensation would begin. At an elevation of 700 meters, the pressure being 687 mm., the temperature would be 19.3° C. (67° F.).

At 640 meters the dew-point would be 13.3° C. (56° F.) or 2.5° C. lower than the initial dew-point 15.8° C. (60° F.), the difference being due to the increased volume. At 1,000 meters the temperature would be 8.2° C. (49° F.), or at a rate of 0.51° C. decrease per 100 meters elevation.

It is pointed out, however, that in all theoretical values the assumption is made that the kilogram of mixed air and water vapor retains its mass unchanged, but this can not be the case with a mixture in free air performing a journey of any extent. It is also to be remembered that in the actual case before us the horizontal movements of the given mass would be of far more significance than the vertical movements.

[a] Page 236. The paper in full is translated in Professor Abbe's Mechanics of the Earth's Atmosphere, No. XIV, pp. 198–211. [Improved methods are given by Professor Bigelow in his Report on the International Cloud Observations. Washington. 1900.]

FIG. 21.—MORNING FOG OVER VALLEYS.

FIG. 22.—LIFTED FOG. HEIGHT ABOVE GROUND ABOUT 500 METERS.

FIG. 23.—SEA FOG POURING OVER SAUSALITO HILLS AND THROUGH GOLDEN GATE.

FIG. 24.—FOG WAVES.

FIG. 25.—FOG LIFTING. VIEW FROM U. S. WEATHER BUREAU, MOUNT TAMALPAIS, CALIFORNIA.

FIG. 26.—HELMHOLTZIAN FOG BILLOW. VIEW FROM U. S. WEATHER BUREAU OBSERVATORY, MOUNT TAMALPAIS, CALIFORNIA.

FIG. 27.—FOG BILLOWS.

FIG. 28.—FOG BILLOWS.

FIG. 29.—FOG DRIFTING FROM SEA INLAND.

FIG. 30.—FOG STRATUM; CLEAR ABOVE AND CLOUDY BELOW.

Will dissipate in about three hours. Fog stratum as shown here is about 20 miles square. The elevation of the under surface is 1,000 feet; the thickness of the stratum is between 400 and 800 feet.

In Von Bezold's third paper on the "Thermodynamics of the atmosphere" (see Mechanics of the Atmosphere, pp. 257–288) the effect of mixing different air masses is considered. If two masses of saturated air at 0° C. and 20° C., respectively, and at 700 mm. pressure are thoroughly mixed, the greatest amount of rainfall that can occur is 0.75 gram per kilogram of air and water vapor. The temperature of the mixture will be 11° C. (52° F.). The warmer mixture would have yielded the same amount of rainfall by raising it 310 meters or cooling it 1.6° C. by elevation and 0.8° C. by contact.

Direct cooling by contact or radiation is shown by Von Bezold to be more efficient as a cause of rainfall than cooling by mixture, but in the production of fog it is probable that cooling by mixture (except in the case of ground fogs) is the most important factor to be considered. It is to be noted that reverse pressures should also be studied, for perhaps a close watch upon the conditions prevailing when fog is rapidly dissipating might conversely throw light upon the order and relative importance of the three ways of cooling, viz, mixture, expansion, and radiation.

Von Bezold's deductions may be thus summarized: More vapor condenses when a stream of air and vapor at low temperature impinges on a mass of warmer air than with reversed conditions. Ocean fogs as a rule form when cool air flows over warm, moist surfaces, but in the case under discussion, where the ocean surface temperature is 13° C. (55° F.) and the air temperature may reach 27° C. (80° F.), it is evident that the above does not hold. It is more probable that condensation is the result of the sharp temperature contrasts at the boundaries of certain air currents having different temperatures, humidities, and velocities, and that the contours of the land play an important part in originating and directing these air currents. The summer afternoon fogs of the San Francisco Bay region, then, are probably due to mixture more than radiation or expansion. The winter tule fogs of the Sacramento and San Joaquin valleys are probably pure types of radiation fog, where the process of cloud building is from the cooled ground upward. Occasionally in summer, when the warm air has been pumped out of the valleys and there is rapid radiation, ground fog forms. An illustration of this is given in fig. 22, Plate I, where fog covers a number of valleys. Summer sea fog is shown in fig. 23, Plate II, and, as said above, is probably due to mixture. The wave motions or Luft Wogen of Von Helmholtz are shown in fig. 24, Plate II, and also the surgings or splashings, where a certain condensation results from the mechanical uplifting.

In several papers presented to the Royal Academy of Sciences of Prussia, Prof. H. von Helmholtz has discussed the conditions which must occur in the atmosphere where strata of different densities lie close together, with particular reference to the billow and wave effects near the limiting surfaces of the strata.

"It apppars to me not doubtful,"[a] says Helmholtz, "that such systems of waves occur with remarkable frequency at the bounding surfaces of strata of air of different densities, even although in most cases they remain invisible to us. Evidently we see them only when the lowest stratum is so nearly saturated with aqueous vapor that the summit of the wave, within which the pressure is less, begins to form a haze."

It is probable, as Helmholtz states, that conditions favorable for the origin and propagation of air waves often exist, but with the exception of certain cloud forms it is seldom that the meteorologist has an opportunity to see this wave action clearly defined. It therefore seems of importance to present a few photographs showing the actual wave effects produced probably by the sharp contrasts of air currents of different densities in the vicinity of Mount Tamalpais.

It is thought that in the photographs of fog billows (Plates III and IV) there is evidence of the movement of rectilinear waves propagated, with little change of form and velocity, along the bounding surfaces of the different air strata.

With a wind velocity of 10 meters per second, which nearly corresponds with the mean velocity of the inflowing colder current (the average summer afternoon velocity of the wind through the Golden Gate is about 22 miles per hour), the wave length, λ, is determined by Von Helmholtz to be about 900 meters (2,950 feet). The wave lengths shown in the various fog photographs herewith are of corresponding magnitude and vary, it is estimated, from 100 to 2,000 meters. Helmholtz states further:[b]

"Since the moderate winds that occur on the surface of the earth often cause water waves of a meter in length, therefore the same winds acting upon strata of air of 10° difference in temperature maintain waves of from 2 to 5 kilometers in length."

Equations for the velocity of propagation and the diminution of the speed with a change of the depth of the lower stratum and a discussion of the energy of the waves are given for special cases. It is also pointed out that the elevations of the air waves can amount to many hundred meters, and that precipitation could thus be mechanically brought about. The same wind can excite waves of different lengths and velocities, and the interference and reenforcement may perceptibly modify the wave form. One of the processes by which waves of great height can be formed is thus pointed out by Helmholtz, namely, where two wave summits of different groups of waves reenforce each other. The wave height may be so great that foaming is produced. Such long and deep waves may have a bearing on the explanation of certain local and nonperiodic disturbances.

The demonstrated existence of these air billows and waves is important also in connection with the transmission of other air waves. It is well known that sound waves are reflected and refracted in a marked degree in the vicinity of fog banks, fog walls, and fog billows. The inaudibility of fog signals from sirens is one of the greatest sources of danger and anxiety in navigation. Any increase in our knowledge of the dispersion and aberration of these fog signals will be hailed with joy by many thousand travelers. In the vicinity of San Francisco, as evidenced by the

[a] See Abbe's Mechanics of the Earth's Atmosphere, p. 94.

[b] See Mechanics of the Earth's Atmosphere, p. 103.

series of photographs accompanying these papers, the opportunities for studying the general aberration of sound waves in fog are excellent. It is our earnest hope that in due time some experimental work in this direction may be undertaken at the observatory on Mount Tamalpais. Some very strange effects have already been noticed with regard to the noise of a train when traversing different air strata.

Zones of audibility appear to be quite sharply marked, even after making allowance for the many canyons and "mesas" (tablelands). On foggy days these zones are greatly modified. In addition to changes in density and temperature which sound waves would experience, there are changes due to the movement of the sound-conveying medium. The strong air currents moving toward the listener increase the frequency of vibration and raise the pitch; conversely the air currents moving away from the listener flatten the note.

There have been several instances on nights without fog where ordinary sounds have been heard distinctly a distance of nearly two miles. On other occasions it has been possible to obtain echoes from hills distant one-half mile or more when the intervening valley was covered with fog. The echoes could not be heard when the fog was absent.

The accompanying photographs may throw light upon the much-discussed question of the abnormal aberration of fog signals. It will be remembered that Prof. Joseph Henry, who for twelve years served as chairman of the Light-House Board, thought that the wind played a more important part in the abnormal aberration of sound waves than the so-called acoustic clouds described by Professor Tyndall. It is probable that up to a certain point both explanations may hold, but the wind is seemingly the more active factor in most cases. Sound moving with the wind is refracted downward and moving against the wind refracted upward.[a]

From the great mass of conflicting evidence it appears that a homogeneous atmosphere without the internal stream lines (see reference to this under "Air drainage," in previous pages) conveys sound waves very well; but this is not the usual condition. Under normal conditions the mass of air within a mile or two of a light-house and extending upward half a mile is neither still nor homogeneous. One of the main purposes of the accompanying fog photographs is to show the stratification, faulting, and upheaval effects due to differences of temperature and density caused by extensive and rapidly moving currents. Of course the aberration of audibility of fog signals due to changes of the sound-conveying medium is not to be confounded with the aberration in audibility due to topographical features and the normal reflection and refraction of sound waves. Probably within a short distance of every light-house there are zones or points of inaudibility due to the latter causes. An excellent illustration of this can be found in a paper on Fogs and Fog Signals of the Pacific Coast, by Ferdinand Lee Clarke.[c] It is there shown that the sirens around the Golden Gate and in San Francisco Bay are inaudible at certain points. Here there is an interference of sound waves due to numerous natural reflections.

It has been suggested that if the fog signals at Lime Point and at Point Bonita were properly attuned a resulting harmonic might be heard at certain points instead of the weakened noise now heard. We need measurements of the energy producing the air pulsation, the proportionate energy reaching the ship or given point, and the rate of expenditure with different conditions of density and air movement. By the employment of suitable resonators the pulsations reaching the ship might be more easily detected. With the introduction of etheric telegraphy it would almost seem practicable to obtain by this same principle of resonance electromagnetic signals, and by comparing the time intervals between these and the sound waves in air or transmitted through water the distance apart of the vessels or the distance from the shore might be determined within a few feet.

The velocity of sound, it is generally stated, is within wide limits practically independent of both intensity and pitch. In dry air at 0° C., according to Rowland, the velocity of sound propagation is 331.78 meters (1,090 feet) per second. In water vapor at 10° C., according to Masson, the velocity is about 402 meters (1,318 feet) and at 96° C. 410 meters (1,345 feet) per second. In water at 10° C. the velocity is about 1,435 meters (4,708 feet), in copper about 3,560 meters, and in glass from 5,000 to 6,000 meters.

The velocity is proportional to the square root of the absolute temperature, as given by the formula:

$$a = a_0\sqrt{1 + \frac{\theta'}{273}}$$

where a = velocity of sound
a_0 = velocity of sound at 0° C.

The velocity of sound propagation in dry air is therefore about 37 times more rapid than that of the average summer afternoon winds (20 miles per hour), which blow through the Golden Gate with such regularity and which are the prime disturbing factors in the circulation of the air in this vicinity. The question of refraction of sound in free air has been independently studied by Stokes,[a] Taylor,[b] Henry,[c] Tyndall,[d] and Reynolds,[e] and many of the puzzling phenomena connected with the aberration of sound can be demonstrated to be caused by the bending of the sound beams in traversing air strata of varying temperatures and motions. The most efficient cause of loss of audibility is wind. The loss is not due to an actual retardation of the sound waves by the movement of the air so much as to a refraction of the wave front upward from the earth. Sound traveling with the wind is bent downward and traveling against the wind is bent upward. Knowing this, we are able, by lifting the position of the hearer,

[a] Report British Association, 1857.
[b] Smithsonian Report, 1875.
[c] Smithsonian Report, 1877.
[d] Philosophical Transactions, 1874.
[e] Philosophical Transactions, 1876.

sometimes to make sound audible against the wind. Thus Henry shows that a sound moving against the wind, inaudible to the ear on the deck of a vessel, could be heard at the masthead. Reynolds's experiments even more conclusively demonstrate the bending of the wave front downward as a rule when moving with the wind and upward when moving against the wind.

The accompanying photographs, Plate V, figs. 27 and 28, show air strata moving with varying velocities. As a rule the upper currents have the greater velocity, but not infrequently this condition is reversed. In such cases audibility should be favored even by an opposing wind, and this is sometimes found to be the case. Thus far we have alluded only to the refraction of the wave fronts due to varying air velocities; but the varying temperatures of the different air masses will also affect the relative audibility. Reynolds instances a marked case, where, owing to a thorough cooling of the lower air strata, and presumably a marked inverted temperature gradient, the audibility was excellent, the sound being refracted downward, and all objects "looming," as it were. It is even possible to work out the retardation or acceleration of the wave front with the degree of variation in temperature. Finally, it may be that the temperature and the air motion may act together to refract downward the sound wave, and it may also happen that the one influence may oppose the other. Thus Reynolds gives an example where, with a heavy dew on the ground, sound could be heard equally well against a light wind as with the wind—

"Showing that the upward refraction by the wind was completely counteracted by the downward refraction from the diminution of temperature. This was observed not to be the case when cloudiness at night prevented terrestrial radiation." (Proc. R. S., 1874.)

The presence of large quantities of condensed water vapor brings us to the question of refracting surfaces and the reverberation of the sound rather than its velocity.

When a sound wave travels over a perfectly smooth surface, such as a glassy sea, or a sharply outlined plane of condensation, the intensity of the sound does not diminish with the usual rapidity. In discussing the propagation of sound in whispering galleries, Rayleigh[a] shows that the abnormal loudness is not confined to a point diametrically opposite that occupied by the speaker, but that there is a bending or clinging of the sound waves to the surface of the concave wall. Sonorous vibrations at fog surfaces and cloud surfaces may behave in a somewhat similar way, and it is probable that the curvature of the surface is not of as great importance as the comparative smoothness of the surface. Probably the roll of thunder is an excellent illustration of continued reverberation at cloud surfaces.

WRECK OF THE PACIFIC MAIL STEAMSHIP "RIO DE JANEIRO."

Any memoir upon the fog of San Francisco Bay would be incomplete without a reference to one of the most remarkable of marine accidents. On the morning of Friday, February 22, 1901, the Pacific Mail steamship *Rio de Janeiro* ran upon the Fort Point Reef during a fog. Within fifteen or twenty minutes from the time of striking the vessel sank, and of the 210 persons on board 130 were lost. Another statement, purporting to be official, makes the total number aboard 207 and the lost 127.

The following facts are obtained chiefly from the statements of Pilot F. W. Jordan. The ship's master, Capt. William Ward, went down with the vessel. The pilot boarded the *Rio de Janeiro* in the vicinity of the 9-fathom buoy, near the bar buoy, and anchored in 13 fathoms at a little before 6 o'clock Thursday night, February 21. The weather being foggy, the ship remained at anchor till about 4 a. m., one hundred and twentieth meridian time, when the fog lifted and the Cliff House light could be seen, but not the Point Bonita light. Preparations were in progress to steam into the harbor, when a dense fog came out from the Golden Gate, obscuring everything. There is some difference of testimony as to whether the captain or the pilot gave the orders to proceed in the fog, but the vessel was started on a northeast course with Lime Point straight ahead, steering by the whistle. The pilot expected to get an echo of the ship's whistle from Point Diablo, but heard none. The course was changed north-northeast with the intention of running close to Lime Point. The vessel was not moving at full speed and was subject to a strong cross current, which, apparently acting at right angles to the length of the vessel, carried the ship to the south, far out of the proper course. The first officer was standing on the starboard side listening for the Fort Point bell. No soundings, however, were taken. The vessel struck a short distance to the southwest of the Fort Point light. At the moment of striking the pilot saw the white flash at Fort Point and heard the Fort Point bell.

The pilot had had eleven years' experience in the harbor and was considered one of the most capable pilots in San Francisco. He had never previously met with an accident. There appears to be no doubt of the existence of the strong cross current, inasmuch as other vessels entering

[a] Theory of Sound, vol. 2, sec. 287.

the harbor about the same time on the same morning came near going on the rocks. The Pacific Mail Steamship Company has a rule that vessels must not enter or leave a harbor when fog prevails. On the morning in question the fog lifted for a few moments and then settled down again; but by 9 a. m., local time, the fog had dissipated. The rest of the day was clear and balmy and the water as smooth as a mill pond.

The vessel struck about 5.30 a. m., with the pilot and captain on the bridge, the first officer on the starboard side of the bridge listening for the bell, and the second officer at the telegraph. When the vessel struck, the captain blew the danger whistle, a long blast. Ordinary fog blasts (long enough to count six or seven) had been blown previously.

The details of the accident, particularly with reference to the whistles, the course steered, and the motion of the current, are given, because from such evidence as can be obtained at this writing it appears that even after the vessel struck the sound of the whistle was not heard plainly at Fort Point, not more than half a mile distant, where a lookout of the life-saving station was on duty and where a life-saving crew could have hurried to the rescue and probably reached the ship within five minutes, without doubt saving many of those whose lives were lost. There was also a sentry walking post within a short distance of the lookout. It is stated that some soldiers heard voices and also a whistle, but the evidence is very conflicting, and it seems improbable that if the long danger blast was clearly heard it should pass without notice and subsequent action.

The Weather Bureau records show that about the time of the accident a mongrel tule fog prevailed over the Bay of San Francisco. At Mount Tamalpais the weather was clear, with a wind of 13 miles per hour from the northwest. At San Francisco dense fog prevailed, with little, if any, wind. The wind vane at the Mills Building indicated a southwest wind blowing about 1 mile per hour. From 1 a. m. to 6 a. m. but 9 miles of wind were recorded.

When all is said and done it appears that the fog was the prime factor in causing the loss of the vessel. Owing to the aberration of the sound waves in the fog the pilot was unable to hear the fog signals from either Point Bonita or Lime Point to the north, or the tolling of the bell at Fort Point to the east and north. It has not, however, been shown that the bell was certainly ringing. The Lime Point whistle has great penetrative power. The fog bell at Fort Point is 40 feet above the water, and should be heard for at least a mile. It is supposed to be struck every ten seconds. It is a strange fact that in a paper upon the Fogs and Fog Signals of the Pacific Coast, by Ferdinand Lee Clark, published in 1888, there should occur this statement concerning the fog bell at Fort Point:

> In point of fact it is said to be hardly ever heard except when too late to be of use. * * * If mariners depended upon its sound to tell them how near they were to the point, they would generally have no time after hearing it to clear the danger.

The loss of the *Rio de Janeiro* proves that the bell at Fort Point in its present position is sometimes of little value.

The temperature at the time of the accident was 50° F. at sea level and 52° at a height of 2,500 feet. The thickness of the fog probably did not exceed a few hundred feet; and, as indicated above, it was a land fog rather than a sea fog.

As a general thing the reflected sounds from Point Bonita and Lime Point are heard better on the south side of the channel. On the accompanying rough sketch of the channel the lines of natural reflection are drawn and also the zones of inaudibility.

It is not difficult to account for the failure of the echo of the ship's whistle from some portion of the northern shore, as the distance of the vessel from Point Diablo was too great. The sound waves from the fog whistle at Lime Point, however, should have been heard, and as the moderate southwest wind would tend to cause a deflection of the sound wave upward it is possible that while the sound was inaudible on the deck of the vessel it might have been heard by a lookout at the masthead.

The catastrophe furnishes a remarkable illustration of the utter helplessness of a vessel in fog, despite lights and fog whistles. It would seem that under such conditions nothing short of some method of fog dissipation will suffice.

It has occurred to the writer, although the suggestion may prove of no value in practice, that if a strong sound had been made under water by some automatic contrivance at either Lime Point or Point Diablo, and the *Rio de Janeiro* been provided with some suitable device rendering audible the sound wave through the water, the strong cross current would have facilitated the passage of the sound and a zone of audibility would have been established in the water, while in the atmosphere above the fog signals would have been inaudible.

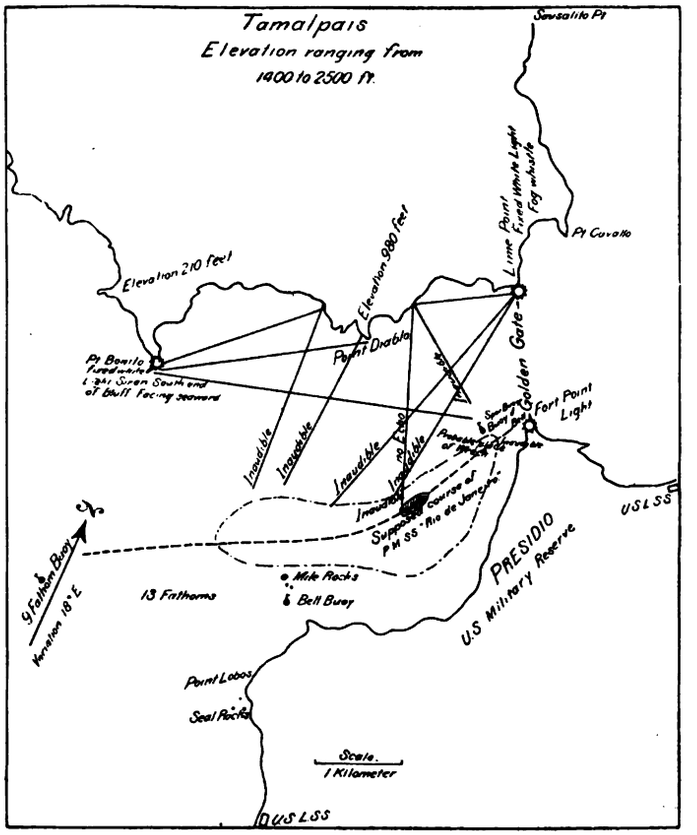

FIG. 31.—Probable conditions at time of wreck, February 22, 1901.

The accompanying photographs, Plate VI, are submitted to show that to a certain degree the captain and the pilot were justified in assuming that they might soon run into areas free from fog. As a matter of fact on the day in question the fog soon disappeared and a delay of perhaps two hours would have prevented the accident. It should not be forgotten, however, that the captain was unwilling to enter the harbor during the fog Thursday night, and that the vessel remained at anchor for a period of nearly twelve hours and was thereby exposed in a large degree to the danger of collision.

THUNDERSTORMS.

It is sometimes stated that thunderstorms are exceedingly rare in California and that lightning is almost unknown along the coast. And it is generally believed that the Pacific coast, or at least the southern half of it, is a region free from thunderstorms and the damage by lightning is practically an unknown quantity. In the eastern part of the United States considerable damage is done by thunderstorms between the months of April and September. In California thunderstorms may occur during any part of the year. In a discussion of 356 reports of thunderstorms in California from July, 1895, to August, 1896, we found that there were 3 dates in July on which storms occurred, 6 in August, 8 in September, 10 in October, none in November, 3 in December, 5 in January, 2 in February, 3 in March, 9 in April, 15 in May, 6 in June, 22 in July, and 17 in August.

Some of the storms covered very large areas and were quite generally reported, such, for example, as October 14–15, 1895; May 29 and August 28–29, 1896. Examining certain marine reports, it appears that on January 25, 1896, thunderstorms prevailed in the Pacific Ocean, and it is not surprising to find that a day or two later thunderstorms were reported in California. These storms apparently moved inland from the ocean. There is another class of storms, however, apparently connected with the general low-pressure movements from the southwest. A condition favorable for thunderstorms in the valley of the Colorado in July and August is frequently followed within ten or twenty hours by thunderstorms along the Sierra.

The following table shows the distribution of thunderstorms in California during the year of 1895–96:

DISTRIBUTION OF THUNDERSTORMS.

Station.	County.	1895.							1896.					
		Elevation.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
		Feet.												
Bodie	Mono	8,248	16–21	12	20								22–23	22–23–24
Briggs	Yolo	51				14–15		15						
Centerville	Alameda	87			8	14–15								
Grafton	San Bernardino	1,759								29				
Crescent City	Del Norte	50						14	21	29		9	29	
Durham	Butte	180						15					29	
Descanso	San Diego	3,400							29					15
Edmanton	Plumas	4,750		26	17–18	15–16 19–20–21			17–26				28	
Evergreen	Santa Clara	150											6	
Follow's Camp	Los Angeles	800										10	6	
Fort Bragg	Mendocino	74						20	18–26					
Folsom City	Sacramento	182				20					27	24	6–21	
Grass Valley	Nevada	2,090							29	29		9–24	29	
Greenville	Plumas	3,600		26	17–28	15–20				29				
Guinda	Yolo	350			13	14–15			26				28	
Georgetown	Eldorado	2,750									26			
Iowa Hill	Placer	2,825		27	18	19			17–29		26	24		
Laporte	Plumas	5,000			18	19			17			18	28	25
Lagrange	Stanislaus	293			18									
Lick Observatory	Santa Clara	4,209				14–15							6	
Lime Kiln	Tulare	600				18–19				29	25–26–27			

DISTRIBUTION OF THUNDERSTORMS—Continued.

Station.	County.	1895.					1896.							
		Elevation.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
		Feet.												
Lodi	San Joaquin	32								29	27	26		
Los Angeles	Los Angeles	293											7	
Los Gatos	Santa Clara	600											28	
McMullen	Fresno	229						15		18	26		8	
Middletown	Lake	1,300											22–23	
Milton	Calaveras	650								29				
Mokelumne Hill	do	1,550											28–29	
Mount Glenwood	Santa Cruz	950				15								
Napa	Napa	95				13–15–16						15		
Newcastle	Placer	956										24		
Niles	Alameda	87							26			15		
North Bloomfield	Nevada	3,000			18									
Oleta	Amador	1,510				12–18–19–20			29		26	24	28	
Orangevale	Sacramento	300								29	27			
Ontario	San Bernardino	1,750										9		
Pasadena	Los Angeles	875			26–27									
Paso Robles	San Luis Obispo	880											6	
Peachland	Sonoma	200							26				6–29	
Pichaco	San Diego	220							28					
Pilot Creek	Plumas	4,000											7–29	
Placerville	Eldorado	1,820				15–16–17			29	29	26–27	16–21		
Quincy	Plumas	3,350		26					17–21				28–29	
Reedley	Fresno	347											6	
Rio Vista	Solano	11											6	
Roseville	Placer	162										16–24	8–9–18	
Rosewood	Tehama	865				17–20				29		18–19	5–9–13–23	1–26
Sacramento	Sacramento	35				15							28	
San Francisco	San Francisco	155				15			26			16–24	29	
San Jose	Santa Clara	95				14							29	
San Miguel Island	Santa Barbara	500				19								
San Leandro	Alameda	48				15			26				29	
Santa Clara	Santa Clara	83				14								
Santa Cruz	Santa Cruz	25								29				
Shasta	Shasta	1,148		19		17–20			28		26–27	18–21–29	2–3–23–28–29	
Snedden's Ranch	Ventura	4,900							27			10		
Summerdale	Mariposa	5,270										24		
Susanville	Lassen	4,195			17								8–29	
Turlock	Stanislaus	106												
Ukiah	Mendocino	620			17			20					6–29	
Upper Soda Lake	Lake	1,300											28–29	
Ventura	Ventura	50							27					
Washington	Nevada	2,140										29		
Westpoint	Calaveras	2,326										29		
Wire Bridge	Placer	565										24		
Yreka	Siskiyou	2,635	3	28–29									23–29–31	1–2–30

During the summer months in the great valleys and canyons of the eastern and southern portions of the State thunderstorms frequently occur during the afternoon and evening hours.

John Muir, writing in the Atlantic Monthly for September, 1901, on the Big Trees, makes the following statement: "Most of the Sierra trees die of disease. Thus the magnificent silver firs are devoured by fungi, and comparatively few of them live to see their three hundredth birth year. But nothing hurts the Big Tree. I never saw one that was sick or showed the slightest sign of decay. It lives on through indefinite thousands of years, until burned, blown down, undermined, or shattered by some tremendous lightning stroke. No ordinary bolt ever seriously hurts Sequoia. In all my walks I have seen only one that was thus killed outright.

"Lightning, though rare in California lowlands, is common on the Sierra. Almost every day in June and July small thunderstorms refresh the main forest belt. Clouds like snowy mountains of marvelous beauty grow rapidly in the calm sky about midday and cast cooling shadows

and showers that seldom last more than an hour. Nevertheless, these brief, kind storms wound or kill a good many trees. I have seen silver firs 200 feet high split into long peeled rails and slivers down to the roots, leaving not even a stump, the rails radiating like the spokes of a wheel from a hole in the ground where the tree stood. But the Sequoia, instead of being split and slivered, usually has 40 or 50 feet of its brash, knotty top smashed off in short chunks about the size of cord wood, the beautiful rosy-red ruins covering the ground in a circle 100 feet wide or more.

"I never saw any that had been cut down to the ground, or even to below the branches, except one in the Stanislaus Grove, about 12 feet in diameter, the greater part of which was smashed to fragments, leaving only a leafless stump about 75 feet high. It is a curious fact that all the very old Sequoia have lost their heads by lightning. 'All things come to him who waits,' but of all living things Sequoia is perhaps the only one able to wait long enough to make sure of being struck by lightning. Thousands of years it stands ready and waiting, offering its head to every passing cloud as if inviting its fate, praying for heaven's fire as a blessing, and when at last the old head is off another of the same shape immediately begins to grow on."

During the months of July and August, 1896, thunderstorms were unusually frequent. During July storms occurred at Bodie on the 4th, 5th, 21st, 23d, and 25th; at Crafton on the 4th; at Descanso on the 8th, 10th, 12th, 13th, and 24th; at Edmanton on the 5th, 15th, and 16th; at Greenville on the 5th, 16th, 24th, and 25th; at Guinda on the 5th; at Laporte on the 5th and 15th; at Lodi on the 25th; McMullen on the 3d, 4th, 7th, 12th, 17th, and 24th; at Middletown, 29th; Paso Robles, 4th; Peachland, 10th; Pichaco, 9th, 12th, 13th, 14th, 15th, 18th, and 24th; Pilot Creek, 5th, 15th, 16th, 25th, and 26th; Placerville, 25th; Quincy, 15th; Reedley, 4th, 5th, 22d, and 24th; Rio Vista, 10th; Rosewood, 5th, 15th, 25th, 27th, and 28th; Santa Cruz, 22d; Shasta, 17th, 26th, 27th, and 28th; Turlock, 4th and 25th; Ukiah, 10th and 29th; Upper Silver Lake, 10th, 27th, 28th, and 29th; Washington, 15th; West Point, 25th; Wire Bridge, Yreka, 25th, 26th, 27th, and 28th.

August, 1896.—Bodie, 12th, 17th, 18th, 19th, and 22d; Crafton, 16th; Crescent City, 29th; Durham, 30th; Descanso, 14th, 15th, and 27th; Edmanton, 22d, 28th, and 30th; Follows Camp, 16th; Folsom, 22d and 30th; Grass Valley, 22d and 30th; Greenville, 22d, 23d, 24th, 28th, and 29th; Iowa Hill, 29th; Laporte, 22d, 28th, and 29th; Los Gatos, 19th; McMullen, 20th and 29th; Middletown, 29th and 30th; Newcastle, 18th and 22d; Niles, 19th; North Bloomfield, 22d; Orangevale, 22d; Peachland, 19th and 20th; Pichaco, 14th, 19th, 26th, 27th, and 28th; Pilot Creek, 17th, 22d, and 29th; Placerville, 22d; Roseville, 21st; Rosewood, 19th, 20th, 23d, 28th, 29th, and 30th; Sacramento, 22d; San Jose, 19th; Santa Clara, 20th; Santa Cruz, 18th; Shasta, 20th and 27th; Susanville, 19th and 23d; Ukiah, 22d; Ventura, 17th; Wire Bridge, 22d; Yreka, 19th, 20th, and 21st.

September, 1896.—Edmanton (distant) on the 20th and 28th; at Grass Valley on the 28th; at Iowa Hill on the 28th; at Los Gatos on the 21st; at Lime Kiln on the 5th; at Laporte on the 2d, 3d, 6th, 20th, 22d, and 28th; at Upper Lake (Ma. Tel. Vineyard) on the 22d; at McMullen on the 20th; at North San Juan on the 28th; at Pilot Creek on the 5th and 28th; at Rio Vista on the 22d; at Reedley on the 5th; at Rosewood on the 22d; at San Jacinto on the 4th, 5th, and 29th; at Shasta on the 7th; at Snedden on the 5th; at Tulare on the 5th, 19th, and 22d; at Turlock (distant) on the 5th; at Yreka on the 6th, and 22d; at Isabella on the 5th.

October, 1896.—On the 20th, at Bodie; on the 25th, at Briggs Vineyard; on the 27th, at Descanso; on the 16th, at Famosa; on the 25th, at Guinda; on the 27th, at Las Fuentes Rancho; on the 25th, at Peachland; on the 16th, at Paso Robles; on the 27th, at Claremont; on the 16th, at Reedley; on the 25th, at Sacramento; on the 25th, at Ukiah; on the 25th, at Winters.

During November and December there were few, if any, thunderstorms in California.

The following notes relative to the character of the storms may be of interest:

On January 26, 1896, the plant of the Haywoods Electric Light Company was struck by lightning. The electrician, Mr. J. Putnam, is reported as saying:

I was not more than 20 feet away from the dynamo when the crash came, and it seemed as if the lightning filled the whole building. The flames shot out from the dynamo about 8 feet, and the wires, magnets, and mica were thrown all over the place. I instantly ran to the switchboard and disconnected the wires, and there was no more

light that night. The accident was a very simple one, and one that will be guarded against in future. The lightning was conducted to the machine by one of the wires, and of course the dynamo was instantly overcharged and burnt. * * * There is one hole and no trace of the missing metal. The wires that surrounded the magnets were so highly charged that they flew in all directions, and when the mica was free it fell around in showers. It will take several days to fix the wrecked machine. If I had been oiling that dynamo when the lightning struck I would have been charred to a cinder as rapidly as that piece of iron was burned.

At Folsom, on the 24th of April, lightning struck the lines of the Electric Light and Power Company five times, and the machines went out of step at each stroke. The lightning arresters were burned and discolored. On April 9, at Ontario, two strokes of lightning entered the electric power house. Wires were burned and a coat belonging to one of the employees set on fire.

The first stroke, it is stated, came from overhead, while the second struck the wires miles away and came in when the sky was clear overhead. Lightning conductors were under the floor, but had not been connected, as it was thought there would be no use for them. After the first stroke they were connected. Notwithstanding, the second stroke did more damage in the power house than the former, showing that it was much the heavier charge.

The Fresno Republican of October 17 reports that—

A heavy thunderstorm in the hills caused a shutting down last evening of the entire electric plant of the San Joaquin Electric Company for twenty minutes. The lightning passing over the lightning arresters caused the points to become welded together, forming a short circuit across the two lines. Occurring at a time when the city was in darkness the delay in repairing was greater than it would have been during the day. No great damage was done to the machinery.

In the city of San Francisco houses and barns have been struck and some damage done. A large cypress tree on the southeast corner of Broderick and Green streets was riven from branch to root. A very large branch was torn off and thrown some little distance. On August 19, 1896, the signal-flag pole at Point Lobos was struck by lightning and badly damaged. The pole was 60 feet high, and the upper 20 feet were so torn that a new pole was necessary. Large splinters of wood were thrown over 150 feet away. Lights were burned out at the terminus of the Sutro Electric Railroad, and other damage done in the vicinity.

On November 7, 1900, four distinct flashes of lightning, accompanied by loud thunder, were recorded at the Weather Bureau office at San Francisco. The first flash was at 10.15 a. m. and the others at 10.27, 10.30, and 10.42 a. m. The average interval between the flash and the thunder was about six seconds. On December 14, 1900, during a sharp thunderstorm a flash of lightning struck the relief gasometer at Bay and Buchanan streets, containing 260,000 cubic feet of gas. The tank was demolished and the gas ignited. The flame was carried by the gale a distance of 250 feet, and the roar could be heard above the noise of the storm. The officials of the gas company estimated the loss at $6,000.

On October 3, 1901, at Houghton ranch, near Thomas Creek, about 12 miles west of Corning, Cal., during a heavy thunderstorm Coutea Jobe, aged 20 years, was struck by a flash of lightning and killed.

The light-house on the Southeast Farallon Island was once struck and a small amount of damage resulted.

January, 1898.—At Hill Ranch on the 31st.

February, 1898.—At Fort Bragg on the 20th, Grass Valley 7th, Iowa Hill 27th, Lodi 7th, Rosewood 7th, 20th, and 27th, Sacramento 7th, Shasta 24th and 27th, Wire Bridge 7th and 27th.

March, 1898.—At Folsom and Grass Valley on the 9th, Hill Ranch 25th, Iowa Hill 9th and 17th, Limekiln, Oleta, Placerville, and Pilot Creek 9th, Rosewood 16th, West Point 9th, Wire Bridge 9th and 26th.

April, 1898.—At Bowmans Dam 29th and 30th, Descanso 14th, Durham 30th, Edmanton 29th, Elsinore 14th, Folsom 30th, Grass Valley 29th, Laporte 29th and 30th, North Hill vineyard 6th, Oleta and Pilot Creek 30th, Quincy 29th, Shasta 27th, Susanville and West Point 30th, Yreka 20th and 22d.

May, 1898.—At Bodie on the 11th and 12th, Cedarville 5th, 11th, and 13th, Grass Valley 19th, Rosewood 12th, 17th, and 18th, Shasta 17th and 18th, Susanville 14th, Yreka 5th, 11th, 12th, and 13th.

June, 1898.—At Bodie on the 6th, Bowmans Dam 7th and 8th, Cedarville 7th, 11th, and 22d, Edmanton 8th and 9th, Manzana 10th, Rosewood 1st, 7th, 8th, 9th, 10th, and 11th, Shasta 1st and 8th, Ukiah th.

July, 1898.—At Bodie on the 6th and 29th, Descanso 10th, Edmanton 8th, Los Angeles 4th, San Jacinto 3d and 4th, West Saticoy 4th, Yreka 8th and 21st.

August, 1898.—At Bodie on the 6th, 12th, and 13th, Cedarville 8th and 13th, Crescent City 28th, Descanso 10th, 15th, 20th, 21st, 22d, 24th, and 28th, Edmanton 28th, Elsinore 9th, 10th, 12th, and 20th, Fallbrook 9th, Greenville 6th and 7th, Laporte 6th, Oleta 7th, Quincy 29th, Rosewood 6th, 13th, 14th, and 31st, San Jacinto 9th and 21st, Shasta 28th, Sierra Madre 9th, Susanville 13th and 29th, Ukiah and Upper Lake 13th, Yreka 6th, 7th, 14th, 28th, and 31st.

September, 1898.—At Anada on the 1st, Descanso 8th, Georgetown, Grand Island, Oleta, and Pilot Creek 26th, Rosewood 1st, Susanville 30th, Turlock 26th, Yreka 1st.

October, 1898.—At Crescent City on the 1st, Durham 3d, Grand Island 3d and 7th, Greenville 7th and 8th, Lodi 2d and 8th, Oakland and Peachland 7th, Rosewood 3d, Turlock 1st and 8th, Wire Bridge 2d.

November, 1898.—At Crescent City, Del Norte County, on the 19th.

December, 1898.—At Escondido on the 9th, Fallbrook 8th and 9th, Long Beach 14th, Poway 9th.

January, 1899.—At Fallbrook, Irvine, Paso Robles, Ranch House, Santa Barbara, and West Saticoy on the 11th, Oleta on the 20th.

February, 1899.—At Berkeley on the 1st and Mills College on the 2d.

March, 1899.—At Goldrun on the 12th, Grass Valley 13th, Iowa Hill 12th, Kennedy Gold Mine 28th, Lodi 16th, Oleta 26th, Pilot Creek 12th and 28th, Rosewood and Shasta 24th and 28th, Wire Bridge 13th and 18th, Yreka 28th.

April, 1899.—At Grand Island on the 25th, Greenville 21st, Guadaloupe 26th, Laporte 21st, Napa 24th, North Bloomfield 27th, North San Juan 24th, 25th, and 30th, Oleta 23d, Pilot Creek and Raymond 30th, Rosewood 1st and 24th, Thermalito 24th and 30th.

May, 1899.—At Bodie on the 5th, Bowmans Dam 4th and 18th, Cisco 12th and 18th, Cuyamaca 8th, Delta 5th, Floriston 18th, Folsom 14th, Goldrun 6th, Grand Island 5th and 24th, Greenville 5th and 14th, Iowa Hill 18th and 24th, Lodi 6th, Moreno Dam 8th, North Bloomfield 5th and 14th, North San Juan 6th, Oleta 24th, Placerville 24th, Sacramento 14th, Tehama, Thermalito, and Wheatland 5th, Yreka 24th.

June, 1899.—At Folsom, Pilot Creek, and Wire Bridge on the 2d, Susanville on the 1st.

July, 1899.—At Cedarville on the 14th, Cuyamaca and Volcano Springs 20th and 21st, Yreka 14th and 15th.

August, 1899.—The central and northern portions of the State experienced unusual electrical storms during the first part of the month, that of the 3d being the most severe in the month of August for many years; it was accompanied by rain at some places and by heavy hailstorms at others, but no extensive damage was reported. In the San Joaquin Valley, where the storm was most severe, telegraph and telephone lines were interfered with, fuses were burned out and a few poles were struck by lightning, and at North Hill vineyard two horses were instantly killed. During the storm of the 6th, in the vicinity of Chico six persons were stunned by lightning while riding in a wagon and a young colt was killed. On the 10th, at Susanville, Lassen County, several sheep were killed by lightning. The following stations report thunderstorms on the 3d: Auburn, Bodie, also on the 1st, 2d, 4th and 7th; Elkgrove, Folsom, also on the 4th; Goldrun, Grand Island, Guinda, Iowa Hill, also 2d, 4th, 5th, 6th; Lagrange, Lankershim, Lathrop, Lick Observatory, Lodi, Merced, Milton, Minturn, Napa, North Bloomfield, North Hill vineyard, North San Juan, also 4th and 6th; Palermo, also 5th and 6th; Pilot Creek, also 4th, 5th, 6th; Raymond, Riovista, Sacramento, Shasta, also 16th; Stockton, Upper Lake, Vacaville, Wheatland, Wire Bridge, Woodland. Other thunderstorms were reported as follows: At Boulder Creek on the 4th and 5th, Chico 6th, Covelo 20th, Edmanton 17th, Fort Ross and Grass Valley 4th, Greenville 4th and 6th, Healdsburg 2d, Kono Tayee 1st, Laporte 4th, 6th, 17th, Los Angeles 9th, Oleta 6th, 7th, Orange 9th, Quincy 6th, Rosewood 6th, 7th, Santa Ana 9th, Susanville 4th, 5th, 6th, 10th, 17th, Yreka 13th, 19th.

September, 1899.—At Arcadia, Buena Park, Compton, Downey, Irvine, North Ontario, Palm Springs, Ranch House, and Sierra Madre on the 9th. There were also thunderstorms in the mountains near Bakersfield, Downey, Huron, and Tejon Rancho on the 11th.

October, 1899.—At Arcadia on the 7th, Crescent City 19th, Cuyamaca and Lamesa 6th, Lodi 11th and 12th, North Bloomfield 12th, North Hill vineyard 11th, North Ontario 6th, Oleta 11th and 12th, Pilot Creek 11th, 12th, and 20th, Ranch House 6th, Reedley 13th, Represa 11th, Rosewood 12th, 21st, and 22d, Shasta 19th and 22d, Stockton 1st, Summit 10th and 11th, Wire Bridge 11th and 12th.

November, 1899.—At Crescent City on the 21st, Fall Brook 17th, Lamesa 14th, Oleta 12th and 15th, Placerville 15th, Rosewood 10th.

December, 1899.—At Berkeley and Fort Ross on the 8th and Crescent City on the 14th, 30th, and 31st.

January, 1900.—At Crescent City on the 7th.

February, 1900.—At Porterville, Rosewood, Santa Maria, and Yreka on the 18th.

March, 1900.—At Bellevue on the 3d, Claremont and Follows Camp 20th, Crescent City 26th, Delta 2d, Edmanton 22d and 25th, Folsom, Grass Valley, Greenville, Laporte, Mokelumne Hill, North Hill vineyard, Oleta, Porterville, Westpoint, and Wire Bridge 22d, Lagrange, Raymond, Redding, Represa, Rosewood, Thermalito, and Wheatland 4th, Moreno Dam 14th, North San Juan 7th, Pilot Creek 21st, Susanville 30th.

April, 1900.—At Bellevue, Bodie, Shasta, Susanville, and Yreka 30th, Bowmans Dam 15th, Branscomb, Durham, Edmanton, Grass Valley, Iowa Hill, Johnsville, Lagrange, Lankershim, Laporte, Le Grand, Lodi, Merced, Nevada City, Palermo, Redding, Rosewood, Vina, Visalia, and Wire Bridge 2d, Elsinore 28th, Greenville 25th, 28th, and 30th, Irvine 3d and 27th, Moreno Dam 27th, Oleta 23d, Pilot Creek 2d and 28th, Raymond 3d.

May, 1900.—At Bellevue on the 31st, Crescent City, Edmanton, Greenville, Laporte, and Pilot Creek 2d, Folsom, Irvine, Represa, Sacramento, Shasta, Tracy, and Wire Bridge 4th, Rosewood 9th and 10th, Susanville 3d.

June, 1900.—At Antioch, Brentwood, Campbell, Danville, Jackson, Laporte, Lick Observatory, Lodi, Los Gatos, Milton, Mokelumne Hill, North Hill vineyard, Oleta, Riovista, San Luis Obispo, San Ramon, and Wire Bridge on the 13th, Auburn, Georgetown, and Iowa Hill on the 12th, Cedarville 11th, Cottonwood, Red Bluff, and Shasta 15th, Edmanton 9th, Greenville 9th and 15th, Paso Robles 8th, Pilot Creek 12th to 15th, Rosewood 8th, 13th, and 15th, Susanville 8th and 9th, Tejon Rancho 8th, Yreka 2d, 11th, 15th, 17th, and 22d.

July, 1900.—At Bodie on the 31st, Bowmans Dam 21st, Cedarville 20th, 21st, and 29th, Elsinore 20th, Greenville 2d, 21st, and 22d, Laporte and North San Juan 21st, Palm Springs 20th and 31st, Pilot Creek 21st, 22d, and 23d, Rosewood 1st, Summit 20th and 24th, Susanville 2d, 20th, 21st, and 29th, Yreka 20th and 29th.

August, 1900.—At Bellevue on the 7th, 14th, 18th, 20th, 22d, and 28th, Bodie 1st, Cedarville 10th, 14th, and 20th, Edmanton 30th, Elsinore and Fall Brook 1st, La Porte 29th, Mammoth Tank 1st, Manzana 31st, Moreno Dam 1st, Oleta 30th, Placerville 30th, Redding 20th, Rosewood 7th and 28th, Shasta 24th, Susanville 19th, Yreka 14th and 21st.

September, 1900.—At Branscomb on the 7th, 11th, and 13th, Cedarville 7th and 10th, Cuyamaca 2d, Folsom and Grand Island 12th, Greenville 3d, 10th, 11th, and 12th, Jackson 12th, Lodi 13th, North Bloomfield 11th, 12th, and 13th, North Hill Vineyard 12th, Pilot Creek and Placerville 13th, Redding 4th, 5th, 12th, and 13th, Rosewood 4th, 7th, 11th, and 12th, Sacramento 12th, Santa Barbara 1st, Shasta 4th, Summit 12th, Susanville 3d, Tejon Ranch 1st and 2d, Visalia 2d and 3d, West Point 3d and 12th, Wire Bridge 12th, Yreka 7th, 10th, and 12th.

October, 1900.—At Branscomb on the 3d, Crescent City 18th and 23d, Grand Island 28th, Iowa Hill 2d, Keeler, La Porte, and Moreno Dam 11th, Pilot Creek 2d, 11th, and 28th, Redding 11th, Summit 4th, Wheatland 18th, West Point 2d.

November, 1900.—At Berkeley on the 7th and 16th, Branscomb 20th, Claremont and Cuyamaca 17th, Grand Island, Grass Valley, and Los Gatos 7th, Los Angeles 16th, Mills College 7th and 16th, Niles 7th, North Ontario 17th, Oakland and San Francisco 7th and 16th, Oleta 19th, Rio Vista 21st, Rosewood 7th, Sacramento 21st, San Bernardino and Soledad 17th.

December, 1900.—The following stations reported severe storms, accompanied by thunder, lightning, high wind, and rain, on the 14th: Berkeley, Campbell, Fort Ross, Grand Island, Jackson, Lick Observatory, Merced, Mills College, Modesto, Oakland, Oleta, Peachland, Pilot Creek, Rio Vista, San Francisco, San Leandro, Sonoma, Suisun, Vacaville, West Point, and Wire Bridge; also at Crescent City and Tequisquita Rancho on the 16th, and Le Grand on the 17th.

LOCAL STORMS.

With nearly every general disturbance there are reports of individual disturbances with more or less damage in limited areas. As a rule the State of California is exempt from marked tornadic disturbances. Severe local storms, however, sometimes occur, but, as stated above, these are chiefly straight-line wind storms. The following illustration, however, seems to show more of the violent gyratory action of the whirlwind than of an ordinary storm, and is therefore given.

STORM OF DECEMBER 14, 1900.

By J. C. STANTON, voluntary observer.

The storm of December 14 in the vicinity of Rio Vista somewhat resembled a tornado, accompanied by thunder and lightning. The first manifestation seems to have been at Lodi, about 10 miles to the southeast, where considerable damage was done. It then took somewhat of a southwesterly course to Collinsville, where a hay barn was taken up bodily, carried several hundred feet, dropped, and entirely demolished. The building must have been raised perpendicularly, as a large quantity of baled hay which it contained remained intact and unmolested. From this point the storm took a northeasterly course, arriving at Rio Vista about 10.45 a. m., sweeping through the northwest part of the town, unroofing a carpenter shop, blowing down a high board fence, and overturning two windmills at St. Gertrude's Academy. These were strongly constructed, with iron towers, and from their appearance seem to have been twisted off and so badly damaged as to be entirely worthless. About 300 yards from this point the storm demolished another iron windmill, and picked up a heavy handcart, carrying it 600 feet, dropping and breaking it to pieces. By this time the wind was blowing from the west. Half a mile farther on another barn was demolished by being carried a short distance and dropped. From this point the storm traveled easterly, and at a distance of less than a mile unroofed a large warehouse on the bank of the Sacramento River. It then crossed the river in a southeasterly direction, doing some damage. During the storm, which lasted but a few minutes, the wind blew from all points of the compass, commencing from the southeast and returning to the same.

SAND STORMS.

Sand storms and dust storms occur quite frequently in many portions of the State. Particularly on the southeastern slope of the Sierra and in some of the valleys of southern California do these storms occur. The presence of an area of high pressure over Nevada and Utah, causing strong northerly winds, is probably the prime factor in the formation of these dust storms. As might be expected, the air is highly electrified at such times. Like the "northers" of the great valleys these dust-laden winds are very trying upon people and injurious to stock and crops. Many illustrations could be given, but the following will probably suffice:

SAND STORM IN SAN LUIS OBISPO COUNTY.

The following report of a remarkable sand storm near Creston, San Luis Obispo County, is furnished by John G. W. and Wilhelmina A. Schulte. The severity of this storm was also noted by many other observers in their monthly reports for June:

"On June 30, 1898, there was an unusually heavy sand storm from 10 a. m. to 8 p. m. The early morning had the appearance of light fog, although no moisture was felt, and it was soon realized that a sand storm was approaching. The clouds of fine dust became so dense that large oak trees 50 yards away could be but indistinctly seen. The air was very still and sultry. The little sunlight visible at times through the dust was white in appearance and much resembled moonlight. In a little while all things had a gray or yellowish coating. Animals seemed affected and were quiet. Not a sound was to be heard; not even the chirping of birds. There was an unpleasant odor with the dust, which resembled buhach.

"This was said to be the severest storm known in the middle section of San Luis Obispo County. It appeared at Paso Robles, in the northern part of the county, about 8 a. m., but was not felt at Creston, 16 miles southeast, until 9.30 a. m. In Creston there was a slight northerly breeze. Maximum temperature, 91°; minimum, 46°; temperature at noon, 86°."

EARTHQUAKES.

It may be open to question whether the subject of earthquakes should properly be included in a memoir upon climatology. The subject belongs rather to geology. In the absence, however, of any systematic record of seismic phenomena in the State of California, a brief record of the quakes has been kept by the Weather Bureau. There is a well-defined belief among the older residents of California that earthquakes are preceded by a spell of sultry weather, and this is even known by the name of "earthquake weather." There is, however, no known relation between earthquakes and the weather. As shown by the following table, some of the most severe earthquakes have occurred when the conditions of weather were in nowise those which are said to be characteristic. The true causes of earthquakes must be sought elsewhere than in meteorological conditions.

January, 1897.—At Niles on the 29th, San Leandro 17th and 23d.

February, 1897.—At Descanso on the 16th and 25th.

May, 1897.—At Crescent City on the 15th, 23d, and 29th, Edmanton 15th.

June, 1897.—On the 20th at Campbell, Centerville, Hollister, North Hill Vineyard, Rio Vista, Sacramento, San Francisco, San Jose, San Leandro, Santa Cruz, and Stockton.

July, 1897.—At Castle Pinckney on the 18th.

August, 1897.—At Ukiah on the 19th.

September, 1897.—At Descanso on the 6th and 22d, Hollister 2d.

October, 1897.—At Campbell on the 2d and 17th, Descanso 27th, Niles 2d, San Francisco and San Jose 17th.

November, 1897.—At Descanso on the 12th and 22d, Escondido and Fall Brook 22d.

December, 1897.—At Niles on the 26th.

1898.—The only severe shock experienced was on the 30th of March, when considerable damage resulted at San Francisco, Vallejo, and other points in the central and northern portions; and at Centerville, Alameda County, it was reported the most severe since October 21, 1868.

January, 1898.—At Peachland, Sonoma County, at 5.15 a. m. on the 1st.

February, 1898.—At Bishop, Inyo County, a light shock on the 6th, and five distinct shocks between 3.30 and 5.30 a. m. on the 15th.

March, 1898.—At Descanso on the 3d, Upper Lake 17th; and the following stations reported unusually severe shocks on the 30th, at about 11.42 p. m.: Agnews, Berkeley, Campbell, Fort Ross, Georgetown, Hollister, Iowa Hill, Lytton Springs, Napa, Niles, North San Juan, Oakland, Oleta, Peachland, Rio Vista, Sacramento, San Francisco, San Leandro, Santa Cruz, Stockton, Upper Lake, Vacaville, Vallejo, and West Point.

April, 1898.—At Claremont on the 30th, Descanso 21st; Fort Bragg, Mills College, Oakland, Peachland 14th, Pomona 30th, Upper Lake 14th and 15th.

May, 1898.—At Cedarville on the 17th and 19th, Hollister 28th. There were frequent shocks during the month at Fort Bragg.

June, 1898.—At Descanso on the 23d and 24th, Ukiah 8th, 9th, and 11th, Upper Lake 9th.

August, 1898.—At Oakland on the 7th, San Leandro 28th and 31st.

October, 1898.—At Bishop on the 13th, Descanso 30th, San Bernardino 23d, Ukiah 15th.

November, 1898.—At Centerville on the 14th, Summerdale 5th.

December, 1898.—At Centerville and San Leandro on the 7th.

January, 1899.—Light shocks occurred at Napa and Sonoma on the 13th, and at San Bernardino on the 24th.

March, 1899.—Light shock at Ukiah on the 7th.

April, 1899.—Light shocks at Oakland on the 5th and 30th, Cuyamaca 14th, Hydesville 16th and 18th. On the 30th quite heavy shocks were reported at Alvarado, Campbell, Capitola, Coyote, Gilroy, Glenwood, Hollister, Los Gatos, Niles (Centerville), Pacific Grove, San Francisco, San Leandro, Santa Cruz, Soledad, Stanford University, and Stockton.

May, 1899.—There was a light shock at Bishop on the 13th.

June, 1899.—On the 1st, at 11.20 p. m., severe shocks occurred at San Francisco, Niles, Oakland, Stanford University, Capitola, Mills College, Napa, and Livermore. Lighter shocks were also reported, as follows: On the 1st at Campbell, Moreno Dam, Peachland; 3d, Oakland; 5th, Bradley; 11th, Keeler, Porterville, and Milo; 13th, San Francisco, San Jose, and Berkeley; 25th San Miguel.

July, 1899.—At 12.10 p. m. on the 6th light shocks occurred at Berkeley, Boulder Creek, Campbell, Capitola, Coyote, Elmwood, Gilroy, Glenwood, Gonzales, Hollister, Lathrop, Le Grand, Los Gatos, Merced, Milbrae, Modesto, Mount Eden, Napa, Niles, Oakland, Pacific Grove, Salinas, San Francisco, San Jose, Santa Cruz, and Stockton. Several severe shocks occurred in the southern portion of the State on the 21st and 22d, followed by lighter ones on the 23d, 28th, and 29th; reports were received from Anaheim, Arcadia, Colton, Duarte, El Cajon, Elsinore, Escondido, Fall Brook, Florence, Los Angeles, North Ontario, Pasadena, Pomona, Redlands, Riverside, San Bernardino, San Diego, San Dimas, San Pedro, Santa Ana, Spadra, and Ventura.

August, 1899.—The following stations reported light shocks on the 4th and 5th: Ben Lomond, Boulder Creek, Campbell, Capitola, Glenwood, Lathrop, Los Gatos, Napa, Niles, Oakland, San Francisco, San Jose, Santa Cruz, and Tequisquita. There was also a slight shock at San Diego on the 21st.

September, 1899.—There was a severe shock at San Miguel on the 16th; two light shocks at Needles on the 20th.

October, 1899.—Light shocks occurred at Cuyamaca, Peachland, and Santa Rosa on the 12th; Moreno Dam, 11th and 28th.

November, 1899.—There was a light shock at Napa on the 16th.

December, 1899.—On the 25th sharp shocks were experienced throughout southern California; many observers reported the shocks the most severe ever known. Lighter shocks were also experienced frequently from the 25th to the 31st. Reports were received from the following stations: Arcadia, Banning, Claremont, Crafton, Cuyamaca, Duarte, El Cajon, Elsinore, Escondido, Fall Brook, Follows Camp, Girard, Hemet, Indio, La Mesa, Long Beach, Los Angeles, Monte, Moreno Dam, Needles, North Ontario, Norwalk, Ontario, Palm Springs, Pomona, Ravenna, Riverside, San Bernardino, San Diego, San Dimas, San Jacinto, Sierra Madre, Tehachapi, Tustin, and Whittier. Lighter shocks were reported at Chico on the 12th, 13th, 19th, 20th, and at Napa on the 25th.

January, 1900.—At Campbell, Niles, and San Leandro on the 14th, Los Gatos 6th, Moreno Dam 28th, Napa 5th, Palm Springs, "frequently during the first part of the month," Peachland 31st, San Jacinto 1st, 2d, 4th, 9th, 13th, 15th, and 27th.

February, 1900.—At Claremont on the 2d, Cuyamaca 13th, Petaluma 9th, San Jacinto 7th and 9th.

March, 1900.—At Claremont on the 21st, Napa, Vacaville, and Vallejo 26th, Peachland 20th, San Jacinto 18th.

April, 1900.—At Cuyamaca on the 23d, Fall Brook 9th, Napa 16th, San Jacinto 15th and 16th.

May, 1900.—At Mount Eden on the 20th and San Jacinto on the 10th.

June, 1900.—At Cuyamaca on the 19th and 20th, Keeler 26th, San Ardo 9th.

July, 1900.—At Branscomb on the 12th and 13th, San Diego 23d, San Jose 28th.

August, 1900.—At Elsinore on the 18th, Ferndale 16th; Mills College, Niles, and Oakland 31st, San Jacinto 19th, San Jose, Stanford University and Tequisquita Rancho 31st.

September, 1900.—At Oakland on the 19th and Tequisquita Rancho on the 28th.

October, 1900.—There was a light shock at Tequisquita Rancho on the 24th.

November, 1900.—Light shocks occurred at Branscomb on the 8th, Cuyamaca 5th and 19th, Fallbrook 14th, Moreno Dam 19th, Napa 25th, Oakland 24th, Penn Grove 13th.

December, 1900.—There was a light shock at San Jose on the 30th.

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